

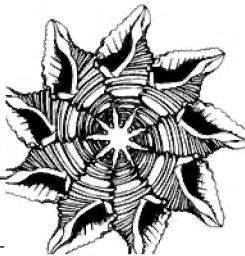
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# CONCHOLOGIST



Quarterly Journal of the Conchologists of North America

# CONCHOLOGISTS OF AMERICA, INC.



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world. In 1995, COA adopted a conservation resolution: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

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**Front cover:** *Harpa amouretta* Röding, 1798, 41.4mm, discovered in a few centimeters of water at +0.7m tide, in a sand pocket on the reef at Shimoni, southern Kenya. Both front and back covers are by Simon Aiken, who photographed the *Harpa* using a Nikon D3200, Sigma 105mm macro lens (f/22), twin SB-R200 speedlights and Nikon SU-800 commander unit.

**Back cover:** *Meganipha rhecta* Thompson, 1978, lives at the top of a ridge in the Loma del Puerto, northern Dominican Republic. Its very limited range, its specialized habitat, and the inaccessibility of these mountains mean that only a handful of collectors have observed the living snails. The exquisitely delicate varices have earned it the name "snowflake snail." Here is a specimen *in situ*. Photos by Simon Aiken (simonaiken@btinternet.com), who will present more landsnails from the Dominican Republic in a future *American Conchologist*.



**Editor's comments:** I have to start off the comments in this issue with a couple of corrections. About the September *American Conchologist*, COA member Steve Rosenthal wrote, "One comment re page 43 – the description (in two places or more) for the Tripp's winning exhibit should use the name "Meteo Tsunami" (actually "meteotsunami") and not metro tsunami. Google "MeteoTsunami Naples 2016" to read more about it. Its [sic] fascinating. I remember seeing pics and a video from 2016 from Sanibel on Pam Rambo's "I Love Shelling" Blog and also hearing about it from Amy Tripp, the term was totally new to me." Thanks for the correction Steve. About the December issue, Martin Tremor was 82, not 83, and passed away in St Petersbug, FL, where he resided. For some reason I had North Dakota listed (not sure where that came from). Also, Ethel Rita Sinow was 92, not 93, when she passed away.

This is another eclectic issue and once again, Simon Aiken has come through with some fantastic shell images for both covers and a pictorial of some deep-water specimens. He also sent me a number of incredible images from a recent shelling trip to the Dominican Republic – promising a follow-up article this year.

The first article in this issue is about a mystery moon-snail; at least it was a mystery to me. A bit of research finally caught me up to where probably a lot of our members are in terms of having heard of and understanding *Haliotinella patinaria*. I applaud you each and every one. I had never heard of it.

Next we have Everett Long's plea for *Neptunea* nominations. I understand that some of you have gotten frustrated when your nominee did not win. Do not despair! You can pull that old nomination out and resubmit your deserving person as often as you desire. The competition is tough, but if they were worthy in the past, then send in their name.

Then are the aforementioned Simon Aiken's stunning photos of deep-water mollusks (and one shrimp), a book review by Jay Cordeiro of *Seashells of New England – A Beachcombers Guide*, and because of recent events in California, I have included a short piece on long-time COA member and shell dealer Phillip Clover and his recent travails with the California wild fires. We have Donald Dan's listing of upcoming shell shows and a great series of collecting memories from Gene Everson. We end this issue with two pieces from Paul Callomon: a description of a new shell show award for the Philadelphia Shell Show and an Ode to the Academy.

*Tom Eichhorst*

# An interesting naticid: *Haliotinella patinaria* Guppy, 1876

Thomas E. Eichhorst

A few months ago a friend (Will Ritter of Astoria, Oregon) sent me an email with an image of a shell that looked like a single valve of a chipped, faded or bleached razor clam (Fig. 1). The kicker was that this image was from Eddie Hardy's web site, *Hardy's Internet Guide to Marine Gastropods* ([www.gastropods.com](http://www.gastropods.com)) and the shell was listed as a Naticidae. Neither Will nor I saw a naticid in this razor clam-looking shell. The shell name was *Haliotinella patinaria* Guppy, 1876 (fingernail moon snail) from Florida to Texas, the West Indies, and the Canary Islands. The size was listed as 7-14mm and the image was of the syntype from the Muséum national d'Histoire naturelle, Paris. So here was a species from the Gulf of Mexico and the Caribbean – and I (and Will) had never heard of it. A bit embarrassing, but certainly reason enough for some serious research.

The first place I thought to look was R. Tucker Abbott's, *American Seashells* (2nd edition). That worthy volume, however, was 20 feet away in a bookcase and I was at my computer. So a fast and reliable check was the *World Register of Marine Species* (WoRMS) online at: [www.marinespecies.org](http://www.marinespecies.org). You can also find it by Googling "worms." I entered "*Haliotinella patinaria*" in the box titled "quick search," and was almost instantly transferred to the entry for this species. The WoRMS entry told me this was a valid species in the family Naticidae (subfamily unassigned) and by clicking on the genus name, *Haliotinella* Souverbie, 1875, I found there were two species in the genus and a single synonym (*Pleurobranchus lowei* Watson, 1897) for *H. patinaria*. The type species for the genus was *Haliotinella montrouzieri* Souverbie, 1875. WoRMS went on to list the original genus type description as: Souverbie & Montrouzier (1875), the basis of the WoRMS record as: Rosenberg, et al. (2009), and the basis of the synonymy as: Moro, et al. (2017). I now accepted this as a valid species, somehow placed in Naticidae, but it looked "wrong."

The shell still seemed most like a razor clam (Fig. 2) with the periostracum removed and the only known synonym was originally described as a *Pleurobranchus*. This is a sea slug genus! I now have a razor clam-like shell on a moon snail species that can be confused with a sea slug. I was still quite a ways from understanding this species.

My next step was to "Google" the name, "*Haliotinella patinaria*" and look for images of the shell online. All of the images presented (3) were variations of the same photograph by Manuel Caballer of the syntype from the Paris museum – a chipped shell



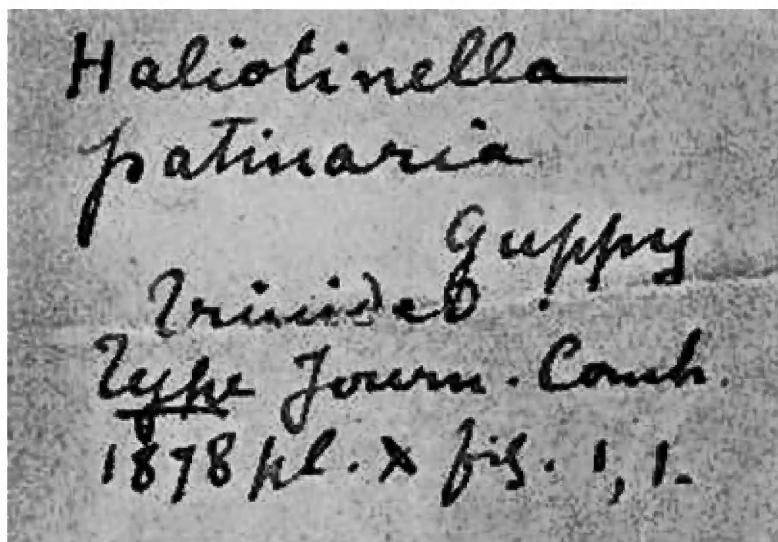
**Fig. 1 (above).** The image sent to me by Will Ritter with the question that started all of this, "What is it?" This image came from *Hardy's Internet Guide to Marine Gastropods* ([www.gastropods.com](http://www.gastropods.com)) and is labeled *Haliotinella patinaria* Guppy, R.J.L., 1876 (fingernail moon snail), shell size 7-17mm, E. Florida – Texas, USA; St Kitts, West Indies; Canaries. The image is credited to the Muséum national d'Histoire naturelle, Paris.



**Fig. 2 (left).** A razor clam stripped of its periostracum (species unknown). At first glance, this seemed to be the closest match to the image sent to me by Will. Both of us thought there must be some mistake involved with the image or the identification, or both.



**Fig. 3.** This is the more complete image found on the Muséum national d'Histoire naturelle, Paris, web site. It is listed as 'syntypes,' *Haliozinella patinaria*, MNHN-IM-2000-5223, 18mm, from the Antilles, with île S. Kitts [Saint Christopher], Antilles, as the type locality. On the left is the ventral view of the shell and on the right is the dorsal. This image includes the broken pieces of the shell as well as the naticiform protoconch, including a magnified view. This image, as well as Figs. 1. and 4. were photographed by Manuel Caballer, Muséum national d'Histoire naturelle, Paris, [www.science.mnhn.fr/taxon/species/haliozinella/patinaria](http://www.science.mnhn.fr/taxon/species/haliozinella/patinaria), used under permission of Creative Commons 4.0, as specified on the museum web page.



**Fig 4.** This is the data slip with *H. patinaria*, listing the 1878 *Journal de Conchyliologie*, pl. X, fig. 1, 1. The correct reference of the 1876 *Journal de Conchyliologie* is provided on the museum's web page.

that looked like a razor clam ([www.science.mnhn.fr/taxon/species/haliozinella/patinaria](http://www.science.mnhn.fr/taxon/species/haliozinella/patinaria)). One of the images also included several depictions of a small naticid-like gastropod, with no explanation or indications of size or magnification (Fig. 3). It looked like it was the same shell shown dorsally and ventrally, and then magnified with the same two views. There was even an image of the data slip, referencing Guppy, 1878, instead of 1876 (Fig. 4).

The Hardy web site listed the reference for the Guppy description (as did the Paris museum web page); so using the *Biodiversity Heritage Library* ([www.biodiversitylibrary.org](http://www.biodiversitylibrary.org)) web site I was able to find a copy of the original description by Guppy (1876). He did not have an illustration of his new species (with a type locality of Antilles), but rather referred to *Haliozinella montrouzieri* Souverbie, 1875 (Fig. 5). Interestingly, the 1875 article is by both Montrouzier and Souverbie, but both the new genus (*Haliozinella*) and the new species

(*H. montrouzieri*) are specifically credited to Souverbie alone, thus the "technically" correct citation would be the cumbersome Souverbie in Souverbie & Montrouzier, 1875. In any case, the new species, *H. montrouzieri*, is listed as occurring in New Caledonia and the authors include an excellent illustration (validating the Guppy description a year later of the similar *H. patinaria*).

What about the data slip date of 1878? Guppy repeated his 1876 description of *H. patinaria* in the *Journal de Conchyliologie* in 1878, and this time included a color plate of his species (Fig. 6). The data slip references this description and illustration, although International Code of Zoological Nomenclature (ICZN) rules allow descriptions from this time period to reference a separate illustration, thus the 1876 date is the correct date. Of course, the Paris museum web site ([www.science.mnhn.fr/taxon/species/haliozinella/patinaria](http://www.science.mnhn.fr/taxon/species/haliozinella/patinaria)) lists the proper date and has both of the Guppy references. I had now proven to myself the validity of the species name and description (such as it was), but still major questions remained.

It was time to give R. Tucker Abbott a chance. I pulled out his 663 page second edition of *American*

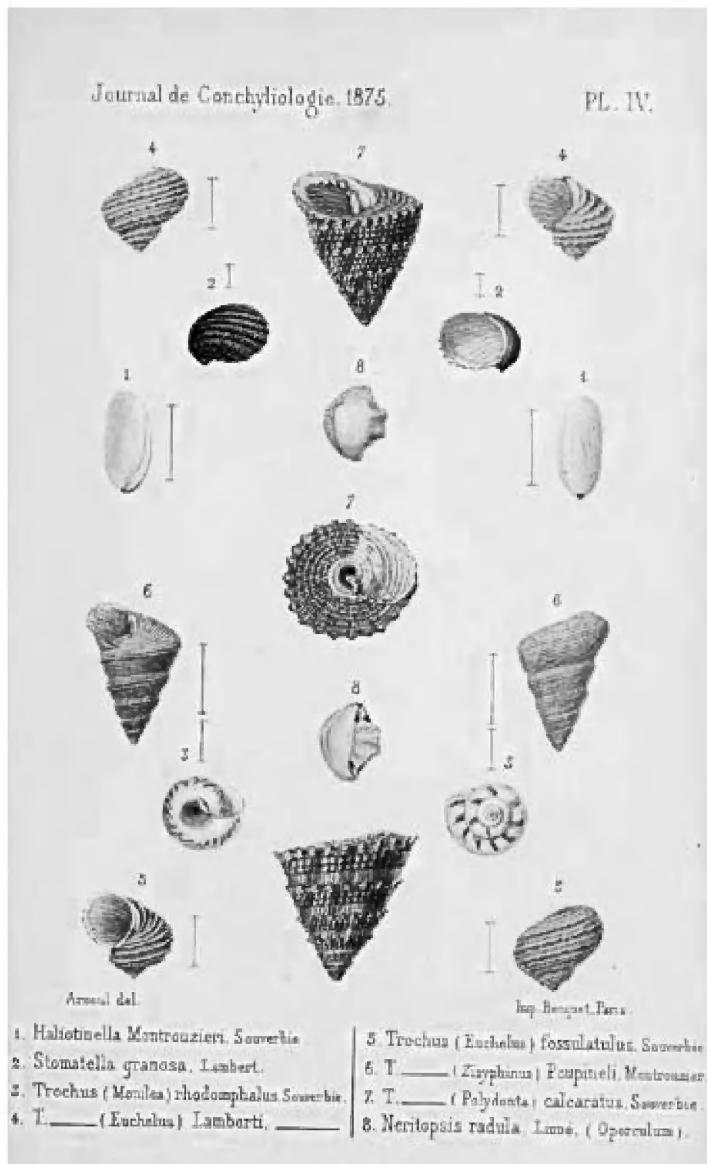


Fig. 5. Plate IV from Souverbie, S.M. & X. Montrouzier (1875). Fig. 1. is the depiction of *H. patinaria* referenced by Guppy in 1876 (close up below).

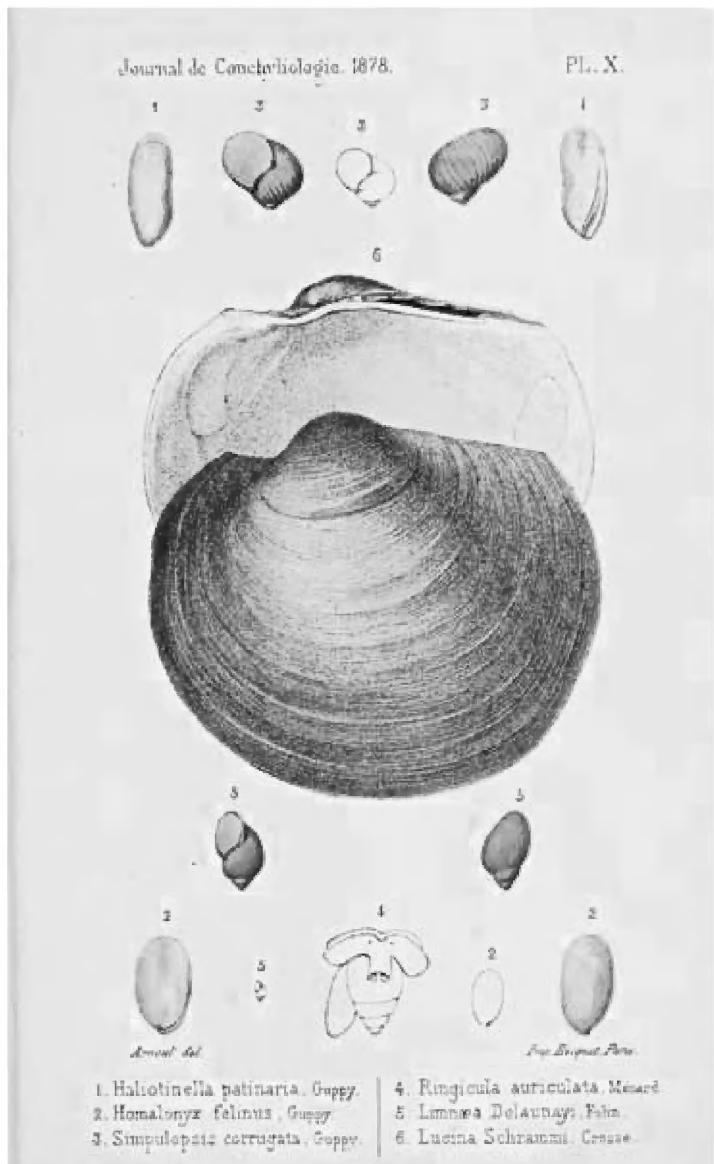


Fig. 6. Plate X from Guppy, R.J.L. (1876). Fig. 1. is his depiction of *H. patinaria*, described two years earlier (close up below).





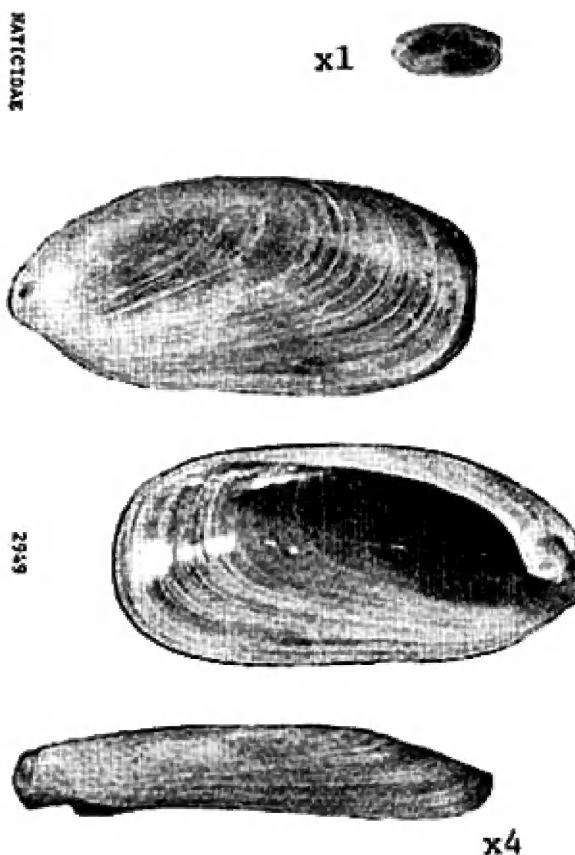
**Fig 7.** A composite of the images by Colin Redfern in *Bahamian Seashells* (2013). These images clearly show the naticiform protoconch on top of the 8mm shell on the left (1) and the similar protoconch on the much larger 15mm shell on the right (2), with its greatly extended outer lip in a flattened, elongated shape. The insert (3) is a 6x magnified view of the naticiform protoconch with its 2 3/4 whorls formed prior to the extension of the outer lip. Note the growth lines as the shell increases in size.

*Seashells* and sure enough on page 158 found a listing for *Haliotinella patinaria* as well as an adequate black and white photograph. This was R. Tucker, however, and he would not leave his reader hanging with such limited information. He wrote,

Shell 12 to 14 mm. long, fragile, narrow (1/2 wide as long), with an aperture as large as the shell itself. 2 nuclear whorls, the first one brown, the next glossy opaque-white, smooth and rounded and sitting up on the apex of the shell. Columella long, a thickened glossy ridge which extends just under the apex; an umbilical chink is present at its top left. Periostracum thin and yellow. Interior glistening white. Operculum chitinous, oval, paucispiral. Animal 2

inches. An amazing evolutionary development in the *Natica-Sinum* line. Uncommon; shallow water in sandy mud among turtle grass. (Details in Marcus, 1965, Bull. Marine Sci., vol. 15, p. 211.) (Abbott, 1974: 158)

I now knew quite a bit about this minute and strange naticid, but I still lacked a really good image. Abbott's description of a "12 to 14mm" shell on an "animal 2 inches" long did provide a solid clue as to why it was confused with a sea slug. I still did not have a real feel for what this species really looked like and how it could possibly be placed in the family Naticidae. For times like this, just above my computer is a bookshelf with a number of books I tend to reference most often. One of these is *Bahamian Seashells*: 1161



Shell very thin; vitreous; whitish; to approx. 13 mm. (ANSP 219400)

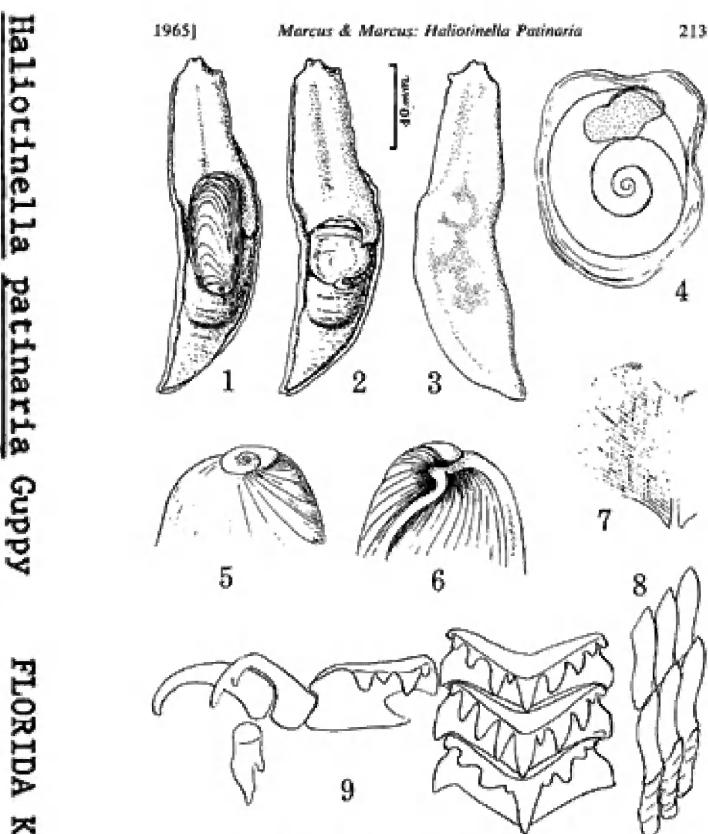
Haliotinella patinaria Guppy

FLORIDA KEYS-CARIBBEAN

Fig. 8. The Kaicher card (no. 2949) provided online by [www.femorale.com](http://www.femorale.com).

*Species from Abaco, Bahamas* by Colin Redfern (2013). Like Abbott's *American Seashells*, the Redfern volume is a vastly expanded improvement over his earlier work, but unlike the 43-year-old Abbott tome, it is full of high-quality full color images. As I expected, my odd little naticid was vividly illustrated and thoroughly described (Redfern, 2013: 50) (Fig. 7). So I now had a quality depiction of the shell of *H. patinaria* and descriptive material adding to what I learned from Abbott. With Colin's image I could easily see the small protoconch that had a typical naticid shape prior to extending out the outer lip in such a strange fashion. I emailed Colin, asking for and receiving permission to use his images (he sent me electronic copies) and he mentioned that my mystery snail had also been figured on one of Sally Kaicher's cards. So it was time to check my Kaicher card collection.

I keep my box of Sally Kaicher's cards in the garage and really did not want to go digging them out – so I clicked on the link to [www.femorale.com](http://www.femorale.com) as I remembered that



FIGURES 1-9. *Haliotinella patinaria* Guppy. 1, dorsal view of preserved snail; 2, same, shell removed; 3, ventral view; 4, operculum; 5, initial whorls of shell, upper surface; 6, same, lower surface; 7, jaw; 8, rodlets of same; 9, radula.

Fig. 9. The image of *H. patinaria* in Marcus & Marcus (1965: 213). They were the first to examine the two-inch animal that sported the centimeter-sized shell and confirmed its correct placement in Naticidae. Their illustration clearly shows the large animal (confused at least once for a nudibranch), the operculum, the radula, and the very small elongated shell. Used with permission.

Marcus and Jose Coltro of Femorale Specimen Shells had recently published the entire Kaicher card collection on their web site for free use by researchers and collectors. They have the cards indexed by family and it is simple to use. Sally's card on this species almost completed my search (Kaicher card 2949). Her depiction of the shell shows the dorsal, ventral, and a side view, but there was one more reference needed (Fig. 8).

At the end of the Abbott description, he mentions Marcus (1965). This reference is actually Marcus & Marcus (1965) and it completes my research. They discovered a living *H. patinaria* (up to that time all that had been found were empty shells) in mud amidst *Thalassia* sea grass, in Biscayne Bay, Florida. After examining both the shell structure and the soft animal parts they were able to confirm Souverbie's contention in 1875 that this genus belonged in Naticidae, and in fact was closely related to the genus *Sinum*. They illustrated the living animal (pen & ink, Fig. 9), showing the 14mm shell hidden atop a 50mm animal. Their illustrations

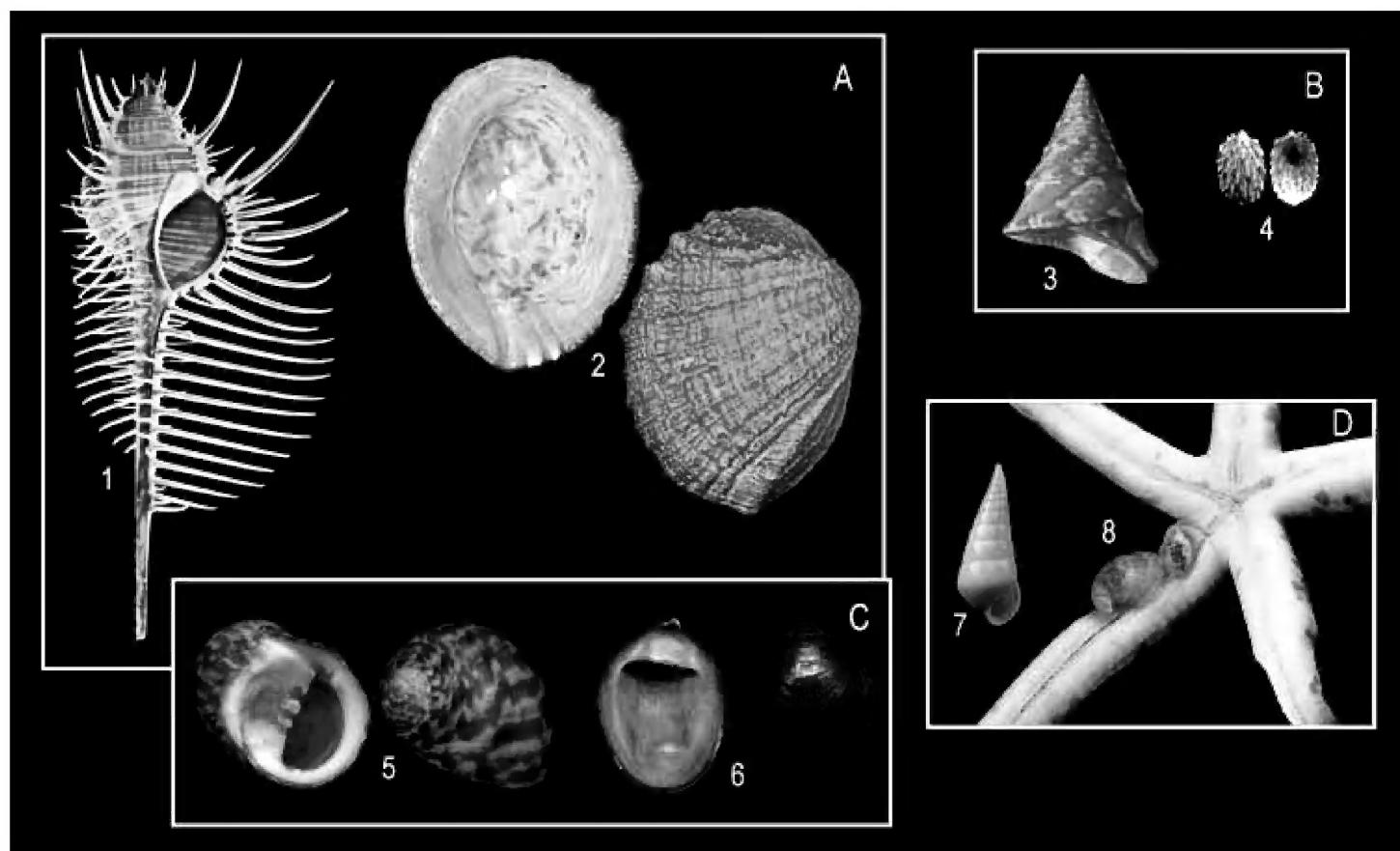


Fig. 10. Examples of limpetiform morphology within molluscan families typified by a completely different shell structure (sizes only to scale within each box). Note that each limpetiform shell has the author in parentheses, indicating the genus has been changed from the one originally assigned by the author. Determining the taxonomy of such species is obviously no easy task. Images: box A1-2, box B3, D7-8 from Wikipedia.com, B4 courtesy of Raymond Huet, box C5-6 images by the author.

A. Muricidae: 1. a typical muricid, *Murex pecten* Lightfoot, 1786, and 2. the limpetiform muricid *Concholepas concholepas* (Bruguière, 1789).

B. Trochidae: 3. a fairly typical trochid, *Odontotrochus chlorostomus* (Menke, 1843) (was *Thalotia chlorostoma* (Menke, 1843)), and 4. the limpetiform trochid *Broderipia rosea* (Broderip, 1834).

C. Neritidae: 5. a typically shaped neritid, *Nerita peloronta* Linnaeus, 1758, and 6. the limpetiform neritid *Septaria apiata* (Le Guillou in Récluz, 1841).

D. Eulimidae: 7. a typically shaped eulimid, *Melanella martinii* (A. Adams in G.B. Sowerby II, 1854), and 8. the limpetiform eulimid *Thyca crystallina* (Gould, 1846).

also showed close-ups of the protoconch, operculum, and radula.

I was pretty satisfied that I had dug into this amazing little shell as far as I was able and now “knew its story,” even though I had not seen an actual shell specimen. On the off-chance I might have missed something, I emailed COA President Harry Lee and asked him if he had any additional thoughts on the matter. I have learned after 16 years of editing this journal that this man has an unequaled depth and breadth of shell knowledge. Sure enough, Harry apologized for being unable to get at his material that might include *H. patinaria*, but then stated, “This two-species genus reminds me of the limpetiform evolutionary extreme in shell forms exemplified by *Concholepas* (Muricidae), *Thyca* (Eulimi-

dae), *Broderipia* (Trochidae), your Phenacolepadidae (e.g., the attached from the Pinecrest beds) and *Septaria*, etc.” So yes, we have other molluscan species that have strayed as far from the “norm” of their family or genus as the small *H. patinaria* (see Fig. 10).

Harry also suggested checking with COA member Gene Everson. Apparently Gene had a prize-winning display (no big surprise there) of limpetiform mollusks (won the COA Award in 2015 for this display at the Space Coast Seashell Festival (Astronaut Trail Shell Club). I asked Gene about this and he sent me images of 14 cases of limpets and limpetiform shells (well over 300 species) that he prepared in 2015. One of the cases with non-limpet species, but with flattened limpetiform shells is shown here (Fig. 11). The



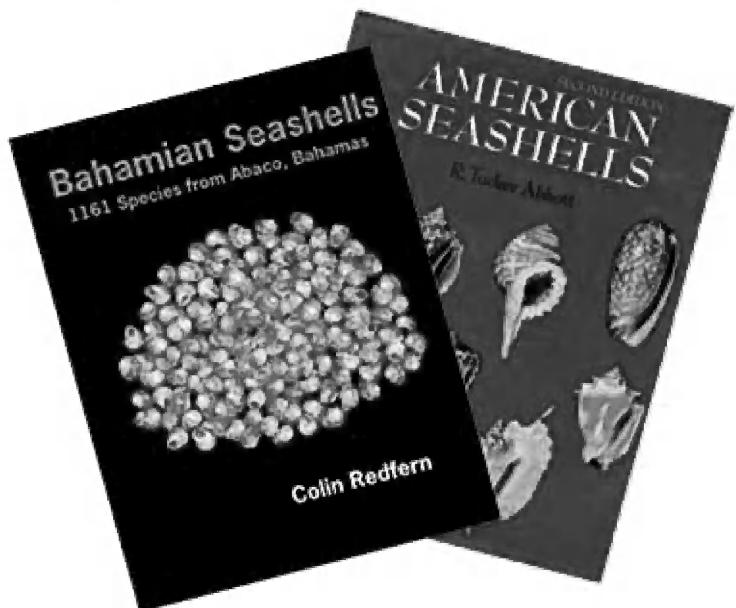
**Fig. 11.** One of 14 cases in an award-winning display by COA member Gene Everson on limpetiform mollusks. Here are muricids, trochids, neritids, and others – all with flattened limpet-like shells but not one is a limpet.

assumption most people make is that this shape is in response to a life in a habitat with fast flowing water or strong wave action. Certainly this is the case with the muricid *Concholepas*, the neritid *Septaria*, and many of the other limpetiform species, but *H. patinaria* inhabits turtle grass beds in relatively calm bays – only minor wave action. So the question remains, why did *H. patinaria*, or any of these other species, discard their familial shell structure?

Why did *H. patinaria* develop evolutionarily as it did? Naticids are predators and I would have assumed that their present morphology has been pretty much determined by the evolutionary needs of a predator – an assumption no more or less valid than the fast stream-strong wave action theory. *H. patinaria* looks more like a sea slug than a naticid – of course *Pleurobranchus* nudibranchs (or sea slugs) are also predators. We are presented with two very different molluscan predator morphologies. The driving factors that shaped *H. patinaria* are undoubtedly much more complex than simple survival of the best predator traits. Natural selection means traits evolve that work; those that do not work fall by the wayside. I spent quite a few years studying nerites and the number one, top of the list, never forget lesson, was that almost any generalized statement or “fact” concerning Neritidae has an exception. This certainly seems to be also true of the Naticidae, and I suspect could be said for pretty much any molluscan family. We may never really know the “why,” but I feel pretty good about this research exercise on the Internet and home-library shelves, generated by a casual questioning email from Will Ritter. I now know what *H. patinaria* looks like and what it “is.” Unanswered is the “why,” but maybe we need such mysteries. We are privileged to be involved, to a chosen greater or lesser extent, with the study of Mollusca, and chasing those impossible questions is endlessly fascinating.

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**Two shell books and the Internet pretty much answered my question as to the identity of the strange naticid.**

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## COA *Neptunea* Award

Many of us are beginning plans for the 2018 COA Convention in San Diego, CA. One of the many events on the agenda is the annual COA *Neptunea* Award(s), and it is my privilege to call for nominations.

The consensus of the COA Board is to reopen nominations with a “clean slate” annually. **Nominees not selected in previous years are certainly welcome for consideration if re-nominated - in fact their re-nomination is encouraged.** For the present cycle, nominations will close on June 1, 2018, so as to allow ample time for deliberation before the convention. **Please note that members of the Board of Directors are not eligible to receive the *Neptunea* Award while actively serving on the Board.**

By way of background, the *Neptunea* Award (Brunner, 2000; Lipe, 2000) was established at the midyear (1999-2000) meeting of the COA Board in order to recognize outstanding and distinguished service to conchologists and malacologists in recognition of:

1. Service to the Conchologists of America.

AND/OR

2. Service to the scientific interests of Conchologists of America.

AND/OR

3. Service to the science of Malacology as it applies to conchologists anywhere.

Although notable exceptions have been made, the COA Board, which serves as the jury for the *Neptunea* Award, has traditionally weighed its consideration for award recipients toward (1) amateurs: those not currently pursuing a principal career involving collection, study, or commerce of mollusks, (2) individuals “working behind the scenes” and relatively unrecognized in the COA world, for their contributions, and (3) active members of the COA. Up to three awards have been made at our annual conventions beginning with the Houston event in 2000 (see below). Nomination(s) for the *Neptunea* Award may be made by any COA member, and the format is simple:

Name of nominee:

This person deserves this award because (Here a somewhat detailed paragraph will suffice.)

..... Signed .....

and either snailmail or email that nomination to me, the new COA *Neptunea* Award Coordinator:

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Swansboro, NC 28584-7204  
[<nlong3@earthlink.net>](mailto:<nlong3@earthlink.net>)

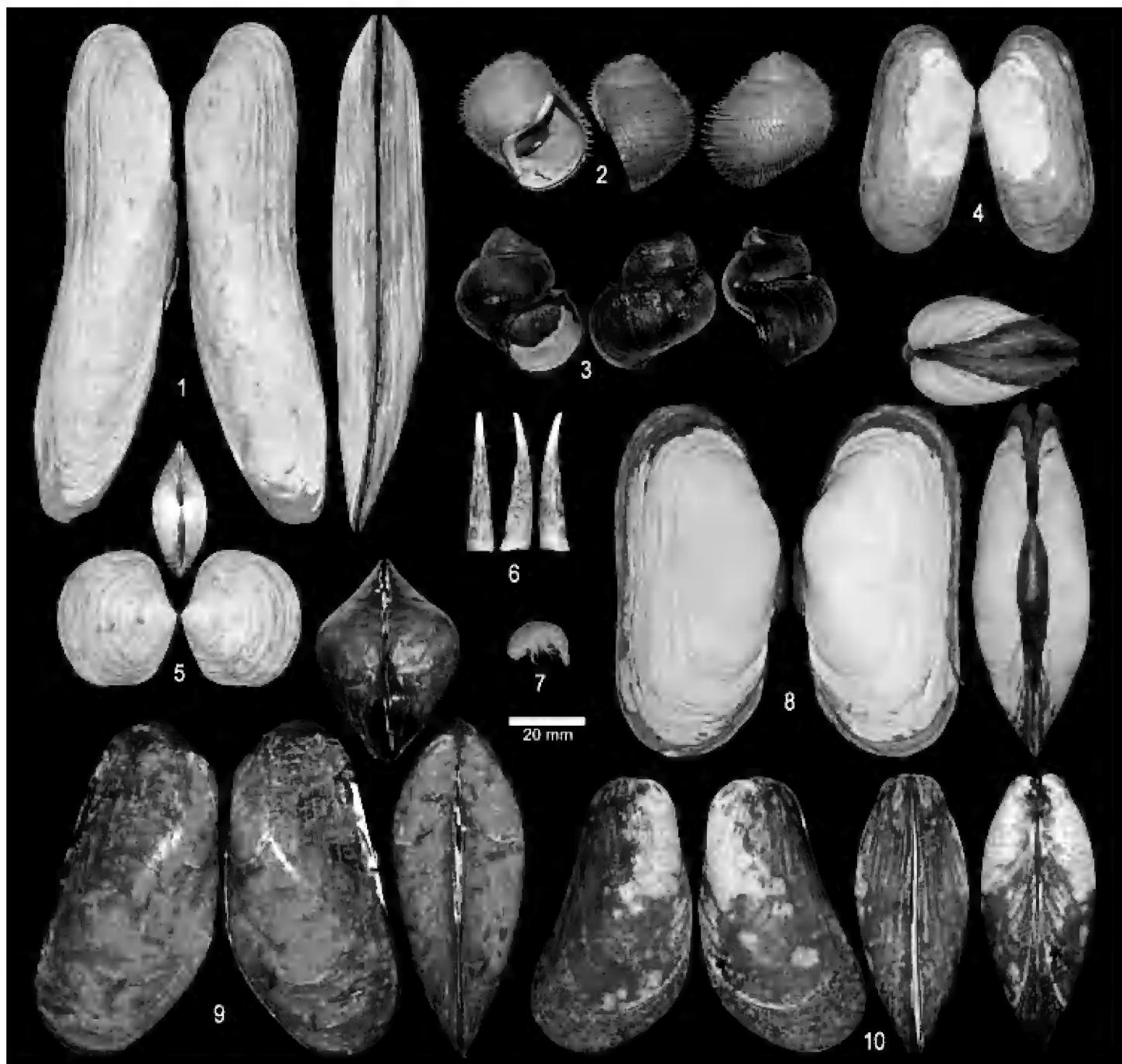
Previous *Neptunea* Award winners:

2000 (Houston, TX): Ross Gunderson, Ben and Josy Wiener, Debbie Wills  
2001 (Port Canaveral, FL): Emilio Garcia, Harry Lee, Lynn Scheu  
2002 (Sarasota, FL): Richard Petit, Bernard and Phyllis Pipher  
2003 (Tacoma, WA) Jim and Linda Brunner, Kevin Lamprell, Doris Underwood  
2004 (Tampa, FL): Bobbi Houchin  
2005 (Punta Rassa, FL): Richard Forbush, Anne Joffe, William Lyons  
2006 (Mobile, AL): Jack Lightbourn, Betty Lipe  
2007 (Portland, OR): none given  
2008 (San Antonio, TX): Bill Frank, Archie Jones  
2009 (Clearwater, FL) none given  
2010 (Boston, MA): none given  
2011 (Port Canaveral, FL): Alan Gettleman  
2012 (Cherry Hill, NJ): Gary Rosenberg, Martin Avery Snyder  
2013 (Sarasota, FL): David and Lucille Green, Marlo Krisberg, and Charles Rawlings  
2014 (Wilmington, NC): Colin Redfern, Tom Rice  
2015 (Weston, FL) John and Cheryl Jacobs; Kevan and Linda Sunderland  
2016 (Chicago, IL) Rich Goldberg, Homer Rhode, Charlotte Thorpe  
2017 (Key West, FL) Robert (Bob) Janowsky

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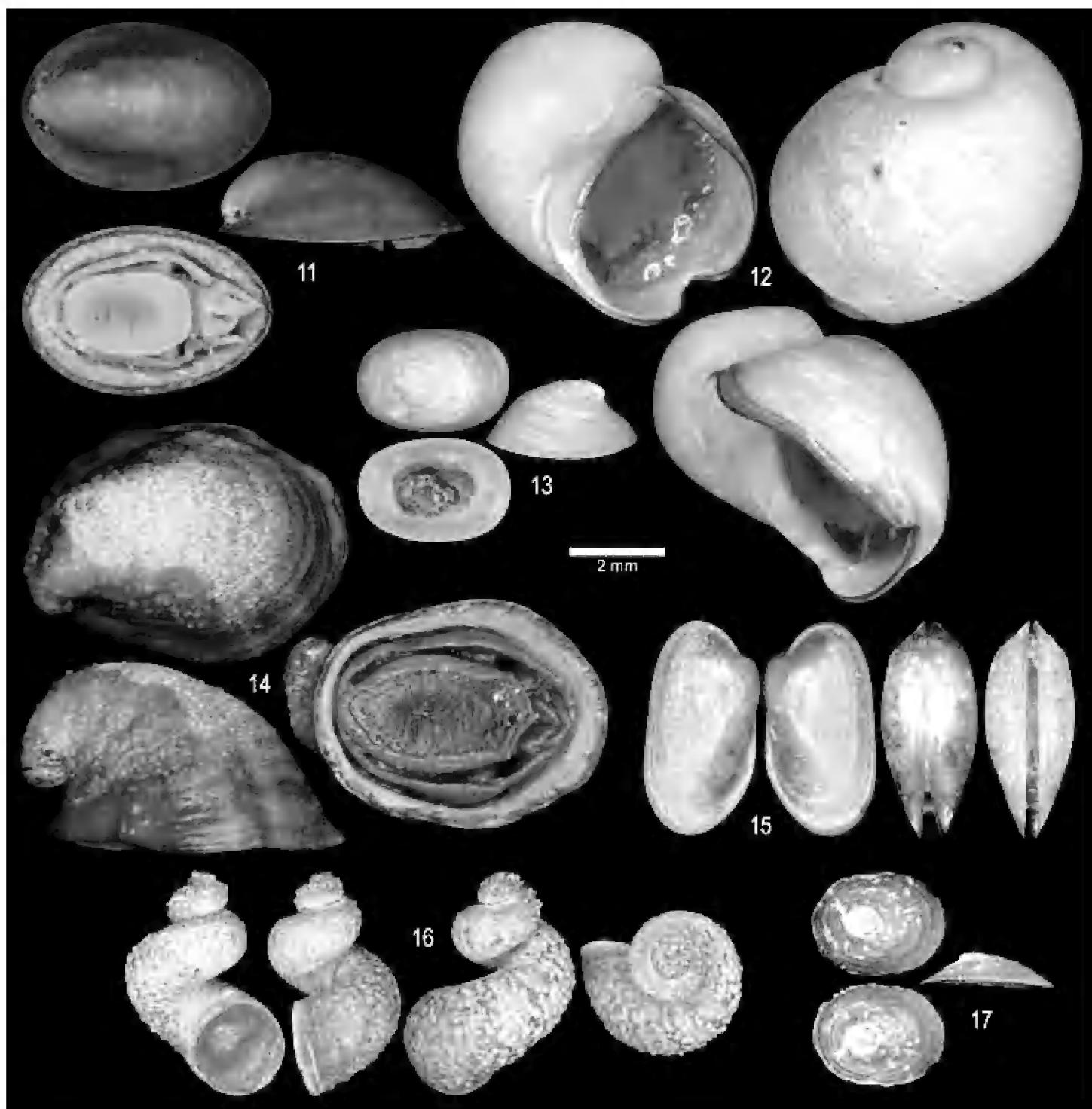
**Lipe, B[etty], 2000.** Presidents Message. *American Conchologist* 28(4): 2. Dec.

## An assortment of rarely seen deep-water Mollusca (and one shrimp)



**1. VESICOMYIDAE:** *Abyssogena phaseoliformis* (Métivier, Okutani & Ohta, 1986) 169mm, 4947m by ROV ROPOS, Shumagin Seep, Aleutian Trench (7 or 8/1996). **2. PROVANNIDAE:** *Alviniconcha hessleri* Okutani & Ohta, 1988, 46mm, 3630m, hydrothermal vent, "Alice Springs" site, Mariana Back-Arc Basin (18°12.59'N, 144°42.43'E), DSV *Alvin* (5/1987). **3. PROVANNIDAE:** *Ifremeria nautilei* Bouchet & Warén, 1991, 49mm, 2500m, DSV *Nautilus*, hydrothermal vent, "Manus Spreading Centre," Manus Basin, 3°9'S, 150°17'W (5/1996). **4. VESICOMYIDAE:** *Phreagena kilmeri* (Bernard, 1974) 74mm, 174m, H<sub>2</sub>S cold seep, 34°12'56"N, 120°15'07"W, Santa Barbara Basin, California, USA, benthic trawl (6/1995). **5. LUCINIDAE:** *Lucinoma aequizonata* (Stearns, 1890), 43mm, 174m, H<sub>2</sub>S cold seep, 34°12'56"N, 120°15'07"W, Santa Barbara Basin, California, USA, benthic trawl (6/1995). **6. FISSIDENTALIIDAE:** *Fissidentalium* sp., 45mm, 5800m, Peru-Chile Trench (Atacama Trench) (2003). **7. HIRONDELLEIDAE:** *Hirondellea gigas* (Birstein & Vinogradov, 1955), 17mm, 8200m, baited amphipod trap, Philippine Trench, 16°45'29"N, 122°29'34"E (2008). **8. VESICOMYIDAE:** *Calyp-togena magnifica* Boss & Turner, 1980, 114mm, 2630m, hydrothermal vent, East Pacific Rise, 12°59'N, 103°56'W (1999). **9. MYTILIDAE:** *Bathymodiolus thermophilus* Kenk & Wilson, 1985, 113mm, 2565m, DSV *Alvin*, thermal vent, East Pacific Rise, 9°48.675'N, 103°56.386'W (11/1997). **10. MYTILIDAE:** *Bathymodiolus childressi* Gustafson, Turner, Lutz & Vrijenhoek, 1998, 95mm, 1770m, cold methane seep, Louisiana Slope, Atlantic Ocean, 27°43'N, 91°16'W (9/1994).

photographed by Simon Aiken (simonaiken@btinternet.com)



**11. LEPETODRILIDAE:** *Lepetodrilus elevatus* McLean, 1988, 5.5mm, DSV *Nautile*, 2630m, thermal vent, 13°N on East Pacific Rise, Cruise "Hot 96" expedition (1996). **12. NEOMPHALIDAE:** *Cyathermia naticoides* Warén & Bouchet, 1989, 6.9mm, 2600m, thermal vent, East Pacific Rise, DSV *Nautile*, 20°49.50'N, 109°05'W. **13. COCCULINIDAE:** *Cocculina* sp. 3.3mm, trawled at 640–820m, *Sea Blazer*, kelp holdfast in brown/green mud/rubble, Juan de Fuca Canyon, SW of Cape Alava, Washington, 47°55'N, USA (3/1994). **14. LEPETODRILIDAE:** *Lepetodrilus fucensis* McClean, 1988, 7.3mm, 2200m, thermal vent, High Rise vent field, 47°58'N, 129°W, Juan de Fuca Ridge, DSV *Alvin*. **15. MYTILIDAE:** *Idas washingtonianus* (Bernard, 1978) 4.2mm, 1240m, bone pickings, vertebra 21, decayed 10,000kg grey whale carcass, Santa Catalina Basin, 33°12'N, 118°30'W, DSV *Alvin* (2/1991). **16. PELTOSPIRIDAE:** *Pachydermia laevis* Warén & Bouchet, 1989, 5.0mm, 2630m, thermal vent, 13°N on East Pacific Rise, Cruise "Hot 96" expedition (1996). **17. COCCULINIDAE:** *Cocculina craigsmithi* McLean, 1992, 2.9mm, 1240m, bone pickings, vertebra 21, decayed 10,000kg grey whale carcass, Santa Catalina Basin, 33°12'N, 118°30'W, DSV *Alvin* (2/1991).



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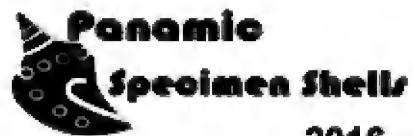
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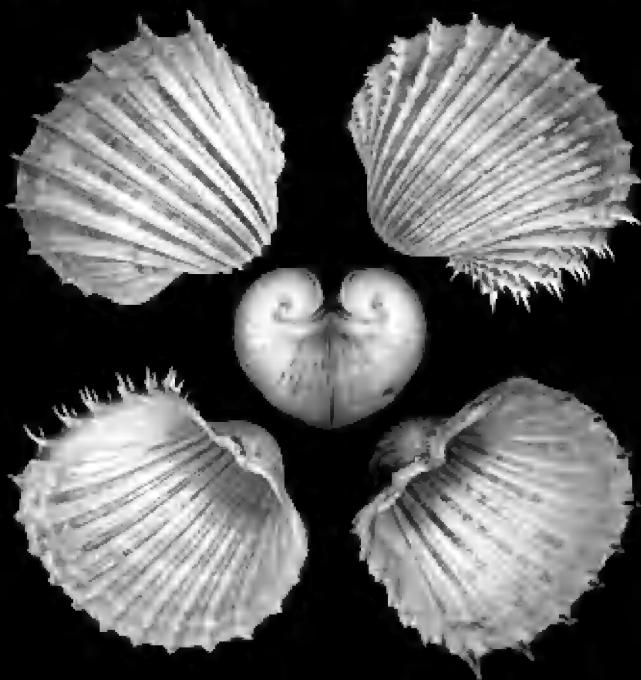
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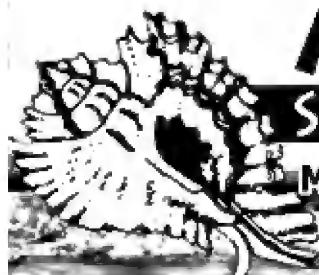
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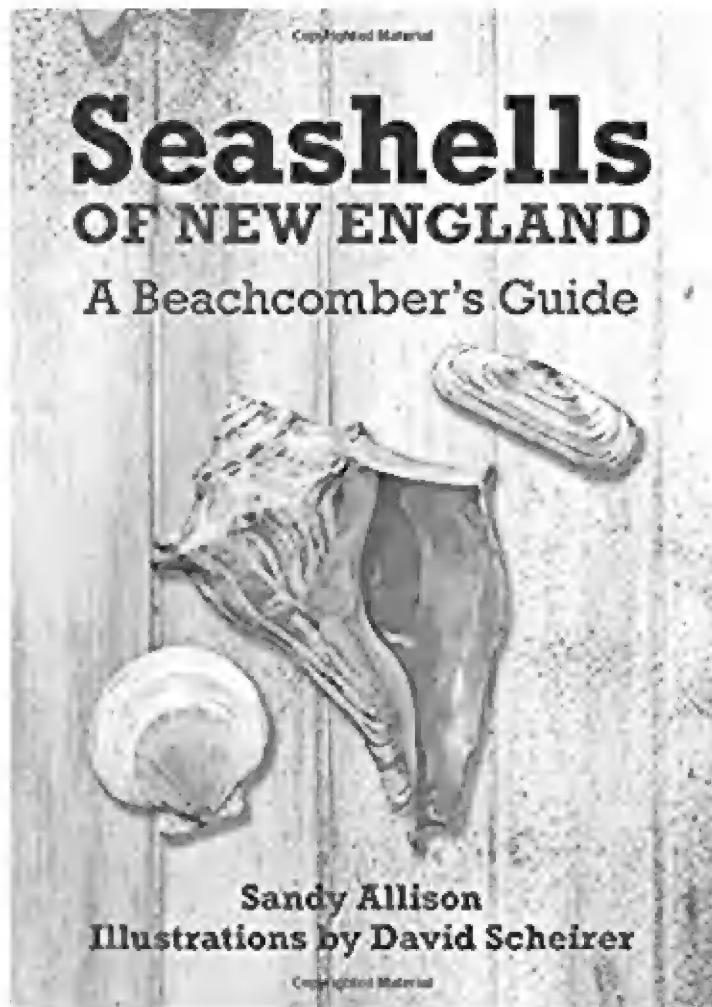
# Seashells of New England – A Beachcombers Guide

by Sandy Allison and Illustrated by David Scheirer  
 (Globe Pequot, 2017); ISBN: 978-1-4930-2789-7

*Seashells of New England - A Beachcomber's Guide* by Sandy Allison and illustrated by David Scheirer is the most recent, and long overdue, publication on the marine shells of New England. At a list price of \$12.95, it is affordable on any budget. I was even able to obtain mine on sale for \$9.08. A guide to New England shells (or even a state guide) is desperately needed for this region. Considering the long history of conchological studies, particularly in Massachusetts and Connecticut, a good modern guide to the fauna is sorely lacking. Early works go back to the 1840s by Harvard University's Augustus Addison Gould (*Invertebrata of Massachusetts*, 1870) with subsequent works by Johnson (1915; 1934). In my rambles across the beaches of Massachusetts, however, I continue to carry my copies of Jacobson and Emerson's books; *Shells from Cape Cod to Cape May* (1961; reprinted 1971), *Shells of the New York City Area* (1961); and *Marine Animals of Southern New England and New York* (Weiss, 1995). When I heard about this book, I planned to add or even substitute it in my arsenal.

The book is small format, 5" x 7.5" (16mo), and printed on high quality paper with card stock covers. The facing title page states it "meets the requirements of American National Standards for Information Science- Permanence of Paper." I must admit, I had to look this up, but apparently it refers to the National Information Standards Organization (NISO) which is an organization for publishers, libraries, and software developers seeking information industry standards to make their operations more professional.\* The Permanence of Paper for Publications and Documents sets the standard for coated and uncoated papers to last several hundred years under normal use. It incorporates things like pH, tear resistance, alkaline reserve, and lignin threshold. So why mention any of this? The book is nicely bound and holds up well in the field and the publisher apparently knows it.

Inside it covers 70 different species (although the rear cover states only 69), typically the most common in in-shore New England waters. Biodiversity includes mollusks only in the Gastropoda and Bivalvia (i.e. no caudofoveates, solenogasters, monoplacophorans – to be expected; but no chitons, cephalopods, or scaphopods either). The author states that species in the book are divided into three somewhat arbitrary groups; coiled snails, limpets, and clams; although the "clams section is titled "Clams & Bivalves." Slipper shells are, for some reason, included among the



"coiled snails." Bivalve species that attach with a byssus (two mussel species) and "secretions" (American oyster) are included in the "Clams & Bivalves" section. Introduced species are evidently absent as I would have included the European oyster, *Ostrea edulis*. For the most part, the common species are covered but the assessment of the New England Neptune, *Neptunea lyrata*, is a bit misinformed. The species is listed as *Neptunea decemcostata*, a name typically assigned as a subspecies. Fraussen and Terryn (2007) consider each a distinct species, but recent taxonomic work by Nakano et al. (2010) places *decemcostata* subspecific to *lyrata*. Nakano et al. (2010) is a difficult work to obtain and not yet cited in field guides, however, the name *Neptunea*

\*FYI NISO: This standard sets the basic criteria for coated and uncoated papers that will last several hundred years under normal use. It covers pH value, tear resistance, alkaline reserve and lignin threshold. Recycled papers will meet the criteria specified. This revision to the original 1984 standard is based on testing conducted by the Institute of Paper Science and Technology and contributions from paper makers, publishers, printers, and the preservation community. NISO is where content publishers, libraries, and software developers turn for information and industry standards that allow them to work together. Through NISO, all of these communities are able to collaborate on mutually accepted standards — solutions that enhance their operations today and form a foundation for the future.

*lyrata decemcostata* is the name used most frequently of late and also the name assigned in Turgeon *et al.* (1998); which should serve as the standard for scientific names of Mollusca of the U.S. and Canada unless something else supersedes it. The common name, ten-ridged whelk, is given for this species; likely lifted from Morris *et al.* (1995) *Field Guide to Shells of the Atlantic Coast*, but most New Englanders know this species as the New England Neptune, the state shell of Massachusetts. The final pages feature very short sections on “Finding Seashells” and a list of particularly productive beaches for shelling by state, most in Massachusetts.

All figures are presented in water color, however, in most cases, only the external view is present and only a single valve provided for bivalves (left valve for 21 species, right valve for 10 species, both valves for 4 species; razor clam valve is questionable). This feature is not uncommon for previous books written about mollusks from the region. From an artistic standpoint, the plates are very nice and worthy of framing, if they were larger. The artist, David Scheirer, produces artwork professionally of these and other animals in a similar style. For identification purposes, however, use of watercolors in this case is of limited utility.

Diagnostic features for the purpose of identification are not emphasized and the shells are illustrated actual size. For large species such as oysters and whelks, this is adequate, but species such as the lunar dovesnail and solitary bubble snail are only 10 mm in size in the book with diagnostic features almost impossible to see. Other recent natural history books have followed this trend (see Harasewych and Moretzohn’s *The Book of Shells*, 2010), in this case, an editorial decision rather than that of the author. University of Chicago Press has produced several books in the series of “The Book of...” (e.g. *The Book of Eggs* by Hauber, *The Book of Fungi* by Roberts and Evans, *The Book of Frogs* by Halliday), all very successful despite the use of actual size figures. Unlike the New England shells book, however, these books supplement actual size images with magnified images of each animal or, alternatively, magnified images of portions of each animal for larger species. The artist’s web site, <https://www.dswatercolors.com/>, proclaims his artistic style as “life size and for the most part... on the small size.”

Other points worth noting are that there is no index, taxonomic or otherwise. The table of contents somewhat makes up for this, listing common names, however, because it is a Table of Contents and not an Index, the Table of Contents is not alphabetic. Fortunately, only 70 species are covered, otherwise finding species in the book could be prolonged.

If the reader would like a simple, well-illustrated pocket guide with short descriptions of common seashells found when beachcombing a typical New England beach and at an affordable price, this book accomplishes that. What the illustrations lack in taxonomic certainty, they make up for in artistic aesthetics. Unfortunately, the book is geared toward the casual beachcomber rather than the semi-professional, or even amateur naturalist, as it is too short and vague on descriptions to be of much use as an identification field guide. So, don’t discard your *Shells from Cape Cod to Cape May*,

*Shells of the New York City Area, and Marine Animals of Southern New England and New York* just yet. A suitable replacement is yet to be seen.

Jay Cordeiro  
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Supply  
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#### Citations:

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# Collecting Shells in Times of Internet

by Guido T. Poppe

ISBN 978-3-939767-69-5

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Editor: Conchbooks

[www.conchology.be/?t=166](http://www.conchology.be/?t=166)

Guido Poppe and his son Philippe Poppe, are certainly well-known figures in the shell world: as shell dealers based in Cebu, Philippines, and as authors of many books, the *Iconography* series, the *Philippine Marine Mollusks* series, *European Seashells*, etc. Their website ([www.conchology.be](http://www.conchology.be)) advertises 174,452 shells for sale and 826,399 images in their online *Shell Encyclopedia* (as of 12 Dec. 2017). Like their counterparts, Marcus and Jose Coltro at [www.femorale.com](http://www.femorale.com), they freely contribute images for use in this journal. So it is a bit strange that I overlooked this online publication for more than a year.

*Collecting Shells In Time of Internet* was first published in November 2016, by Conchbooks, Harxheim, Germany. This online tome sports Lovell Augustus Reeve (1814-1865) on the 'cover' - also a well-known shell dealer and author, but a bit before the Internet. Guido Poppe states in the introduction that his purpose behind *Collecting Seashells* was to meet the challenges of changing times where newer collectors did not necessarily meet with older collectors who could impart knowledge about the hobby. The Internet is today the first (and often only) choice of sharing information. That being the case, he thought to provide a repository of online shell knowledge for newcomers and even for those more experienced shell collectors. Guido acknowledges up-front that not everyone will agree with all that is presented, whether it is problems with his English (he is, after all, writing in English as a native Dutch speaker) or corrections or additions to what he has presented. The marvel here is that this is an eBook and Guido welcomes any input (he asks for readers to contact him directly at: [guido@conchology.be](mailto:guido@conchology.be)) so that he can continue to update and improve this work.

So what are we talking about for contents? Any and everything shell related: collecting (self-collecting, trading, and purchasing), curating (storage, display, data, etc.), identifying, cleaning, history of conchology, philosophy of shell collecting, rarity, ecological considerations, collecting on the web, licensing, taxonomy, restricted shells, fake shells, shell sizes, etc. It is all here. One of the chapters I particularly appreciate is the chapter on references for molluscan families. In alphabetical order, each major molluscan family has a listing of the major references for that group of shells.



## COLLECTING SHELLS In times of Internet

GUIDO T. POPPE

He also lists general references, regional references, coffee table books, technical references, and journals. Each listed reference is illustrated in color. In fact, the entire publication is full of color plates illustrating the various subjects under discussion. There is even a section highlighting various shell collectors and their collections. Again, when you read this eBook, remember that the author invites input, changes, corrections, and additions. This is a 'living' eBook that can change, grow, and get better with time.

This is an eBook and can be read using several different platforms. I downloaded it initially as a pdf file, but as the author warns, there are some disadvantages to this format. Often a series of color illustrations will have the first in the series full-sized, but the remainder are icons and cannot readily be opened in the pdf file. A better option is available to Apple iPad users who can download this volume on Apple iBooks. Android users can download the relevant app on Google Play. Another option, for both Apple and PC (Windows) users is to download the book as an EPUB. This will require you to upload one of several free EPUB readers available on the Internet. So you have a number of options to use in accessing this rather monumental work (over 400 pages). I recommend you do so. It is, after all, free. Thank you to Guido Poppe for this incredible effort to improve our conchological avocation.

# Phillip Clover: in tough times and good

Thomas E. Eichhorst

The second half of 2017 certainly included an abundance of natural disasters. In August, we watched Hurricane Harvey slam into Houston and flood that city as never before. Then in September, Hurricane Irma hit the Florida Keys, causing power outages and wind damage. It was rapidly followed by Hurricane Maria, which devastated Puerto Rico, causing damage that will take years for recovery. The effects of each of these will be long lasting and we will never know all of the hidden tragedies associated with this brutal weather. Soon after these storms hit the east side of the country, wild fires struck in Northern California. In October 2017, over 250 wildfires burned more than 245,000 acres (990 km<sup>2</sup>) in California, causing more than \$9 billion in insured property loss. This was followed in December with more fires, bringing the yearly total to an unbelievable 8,700+ fires burning over 1,350,000 acres. Literally hundreds of thousands of people were forced to evacuate their homes and many of those homes were subsequently destroyed by the fires. Again, lots of nameless tragedies, except in the October fires we had a tragedy that hit close to home for COA.

For years and years I have received mailing lists of specimen shells from Phil Clover of Glen Ellen, California. Phil joined the United States Navy in 1953 and served 21 years in seven different countries. He started SCUBA diving in 1955 and began seriously collecting shells about that same time. As his personal shell collection grew along with his increasing fascination with shells, he became a part-time shell dealer (he was after all still in the Navy) in 1960. When he retired in 1973 Phil became really serious about his shell business. He was usually at the COA convention bourse and many shells in my collection have a Phillip Clover data slip. Phil authored at least five shell books and papers over the years and there are 10 or more mollusks named after him. He has named five shells himself and has been in the shell business for over 55 years, with countless published articles (only a couple are listed here). The last time we talked at a convention , he mentioned that he was really shooting for 60 years as a shell dealer. All of this is to establish that Phil is a long time, well known shell dealer. The October fires in California came close to ending that.

The October fires whipped through Phil's neighborhood. As he tried to save his home he watched as over 50 surrounding homes went up in flames. Phil fought back the flames until he lost water pressure in his garden hose. Then he had to give in the inevitable. As is, his normally raspy voice was much worse after hours of smoke inhalation. Phil's house and belongings were a total loss. This includes his personal collections of cowries, cones, marginellids, etc. Over 20 shell cabinets (some were more than 100 years old)



**A Phil Clover shell list from 1987. The envelope is from later as the early lists were folded and mailed without an envelope. These worldwide specimen shell lists were usually six or more pages, single-spaced, and small font.**



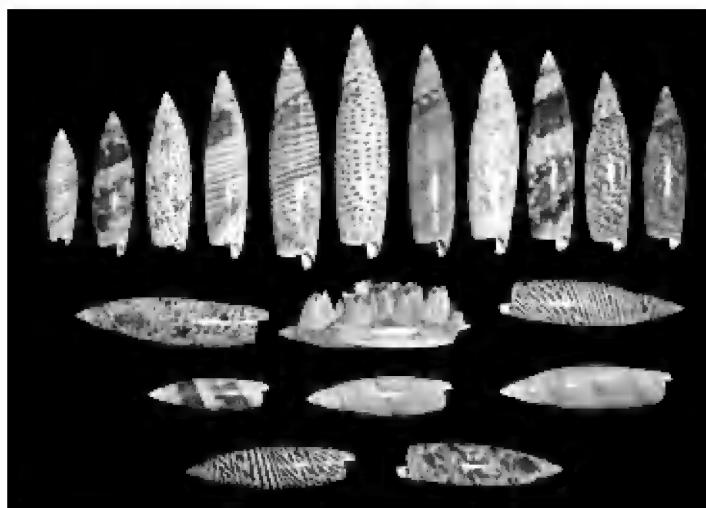
**This is Phil's neighborhood and one of the many homes that, like his and despite his efforts, were destroyed by fire in October.**



Phil Clover and family in Japan in 1960. Left to right: daughter Susan, Phil, son Norman, and wife Joyce. Of that time, Phil remembers meeting famous Japanese shell personages and becoming friends with Mr. Teramachi and Dr. Kuroda.



Phil enjoying a low tide and a chance for that special shell. He started as a collector and never lost his initial enjoyment of both the beauty of shells and that special feeling when you find a rare specimen.



Earlier in 2017, Phil posted this image of *Terebellum terebellum* (Linnaeus, 1758) to illustrate some of the variety he had collected over 50 years. They are now gone.



Various cones Phil purchased on his latest trip to the Philippines

were destroyed. Hundreds of thousands of dollars in inventory was gone, including: shells (a number of paratypes), other personal collectables, home furnishings, books, and antiques.

Phil had just sent me a check for a year's worth of advertising in *American Conchologist*. After the fire he contacted me and stated he didn't think he would need that ad after all. I told him I would destroy the check, but keep the ad running, just in case. I knew he had a trip planned to the Philippines and probably had some stock there plus whatever he might be able to pick up. He thanked me for the ad and when he got to the Philippines he put a picture on Facebook of his shell stock – five shells. He did buy some shells and plans on continuing in the shell game, at least in a limited fashion.

No more six or eight page lists for a while, but certainly some quality specimen shells and maybe a one page list.

I have often had a notion that it might be a good idea to profile COA members: professional malacologists, amateur collectors, shell dealers, etc. on a regular basis in *American Conchologist*. This is certainly not how I planned that process to begin. I must point out that Phil's emails and Facebook postings were all positive. This was a terrible event that he described in a couple of fact-filled sentences, and then started looking forward and talking about the shells he found on this latest trip. I certainly wish Phil the best and I think with his outlook on life and positive attitude, he will be just fine.

## Shells named in honor of Phil Clover

*Benimakia cloveri* Snyder & Vermeij, 2008 (Philippines)

*Swainsonia cloveri* (Cernohorsky, 1971) (Japan, Philippines, Solomon Islands)

*Chicoreus cloveri* Houart, 1985 (Mauritius)

*Cirsotrema cloveri* L.G.

Brown, 2002 (Philippines, New Caledonia)

*Cryptospira cloveriana* Wakefield, 2010 (Malaysia, Borneo)

*Conus cloveri* Walls, 1978 (Senegal)

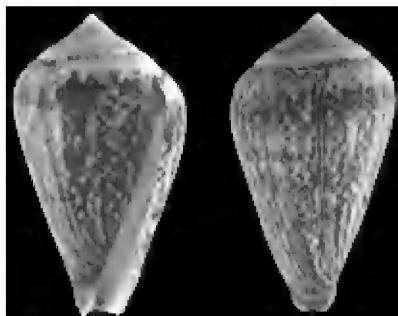
*Latirus cloveri* Snyder, 2003 [now *Fusolatirus suduirauti* (Fraussen, 2003)]

(Philippines)

*Lyria cloveriana* Weaver, 1962 (Sri Lanka)

*Marginella cloveri* Rios & Matthews, 1972 (Surinam, Brazil)

*Favartia philcloveri* (Houart 1984) (Philippines)



*Conus cloveri* Walls, 1978

## Phil Clover publications

1968. **Clover, Phillip**

W. A Catalog of Popular *Marginella* Species with Values, published by author. 15 pp, 117 b/w photos.

1971. **Clover, Phillip**

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1972. **Clover, Phillip**

W. Collecting *Marginella* in Senegal, West Africa. *Of Sea & Shore* 3(1): 17-18/20.

1976. **Clover, Phillip W.** Recently Named *Cypraea*. *Of Sea & Shore* 7(4): 197-200.

1982. **Clover, Phillip W.** *Latiaxis Catalog and Illustrated Check List of the Coralliophilidae Family*. Published by author. 34 pp, 310 b/w photos or drawings on 18 full-page plates.

**LATIAXIS  
CATALOG**

ILLUSTRATED CHECK LIST OF  
CORALLIOPHILIDAE FAMILY



1982

© W. CLOVER

## Shells Phil Clover has named

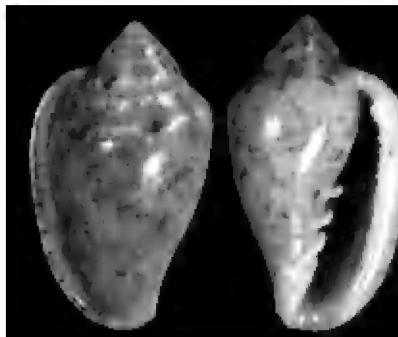
*Bullata lipei* Clover, 1990 (Yucatán, Mexico)

*Glabella ansonae* (Clover, 1976) (Madagascar)

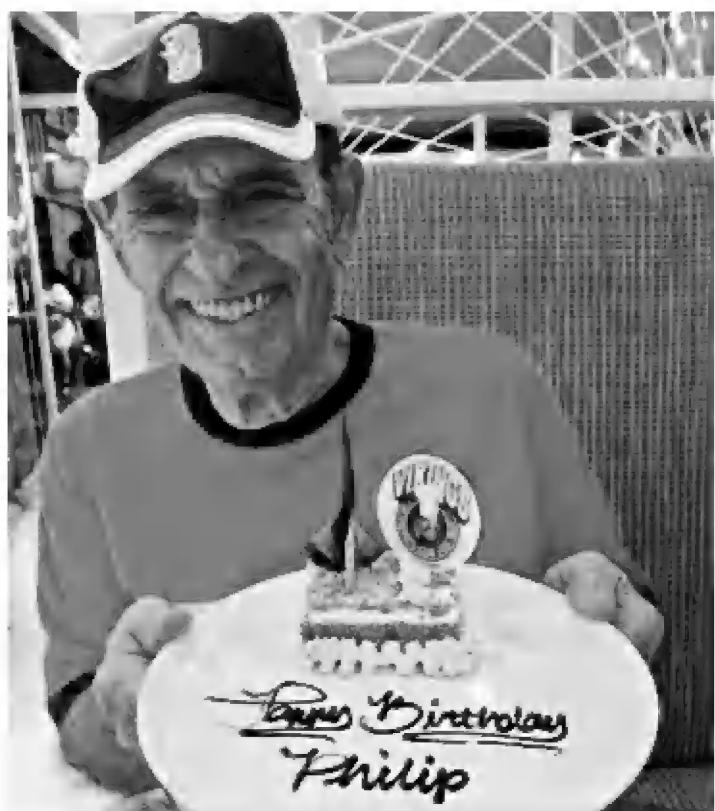
*Prunum pergrandis* Clover, 1973 (Oman)

*Volvarina fortunata* Clover & Macca, 1990 (Somalia)

*Marginella huberti* Clover, 1972 (Angola)



*Marginella huberti* Clover, 1972



Phil celebrates his birthday in the new Viking's Restaurant in Cebu, Philippines. That smile certainly looks like someone enjoying life and ready for the future.

*Marginella senegalensis* Clover, 1991 (Senegal)

*Marginella spryi* Clover, 1973 (Mozambique)

*Conus boschi* Clover, 1972 (Oman, Masirah Island)

*Cypraea angelicae* Clover 1974 (Guinea)

*Cypraea joycae* Clover, 1970 (Taiwan)

*Dentiovula oryza* (Omi & Clover, 2005) (Japan, Philippines)

## 2018 SHELL SHOWS & RELATED EVENTS (January – August)

Following information is subject to change. Please verify with individual organization.

**Jan. 13-14, 2018**

**53rd BROWARD SHELL SHOW**, Pompano Beach, FL  
Emma Lou Olson Civic Center, 1801 Northeast 6th Street  
Alice Pace, 7405 SW 128 Ct., Miami, FL 33183  
Email: [alicepace90@att.net](mailto:alicepace90@att.net) Tel. (305) 301-1296 (Cell)

**Jan. 20-21, 2018**

**SPACE COAST SEASHELL FESTIVAL**, Melbourne, FL  
Eau Gallie Civic Center, 1515 Highland Avenue  
Alan Gentleman, 2225 Tanglewood Lane, Merritt Is., FL 32953-4287  
Email: [lychee@cfl.rr.com](mailto:lychee@cfl.rr.com) Tel. (321) 536-2896

**Jan. 27, 2018**

**FUM (FLORIDA UNITED MALACOLOGISTS)**, Sanibel, FL  
Bailey-Matthews National Shell Museum  
3075 Sanibel Captiva Road, Sanibel, FL 33957  
José Leal Tel. 239-395-2233  
Email: [jleal@shellmuseum.org](mailto:jleal@shellmuseum.org)

**Feb. 9-11, 2018**

**ANNUAL SARASOTA SHELL SHOW**, Sarasota, FL  
(New venue)  
Potter Building at Robarts Arena, 3000 Ringling Blvd., Sarasota  
Nancy Marini, 5003 28th Ct. E., Bradenton, FL 34203  
Email: [sarasotashellclub@gmail.com](mailto:sarasotashellclub@gmail.com) 941-758-9790

**Feb. 10-11, 2018**

**AUSTRALIA NATIONAL SHELL SHOW**, Fremantle, AU  
South Fremantle Football Club, Parry Street  
Joanne Lockwood, PO Box 7037, Safety Bay 6169, W.A., Australia  
Email: [xjoannex@bigpond.com](mailto:xjoannex@bigpond.com)  
Web site: <http://perthshells.com/National2018/>

**Feb. 23-24, 2018 (Friday & Saturday)**

**ST. PETERSBURG SHELL SHOW**, Seminole, FL  
Seminole Recreation Center, 9100 113<sup>th</sup> St. N., Seminole, FL  
John Jacobs, 202 Soldier Court, Seffner, FL 33584  
Email: [johncheryl@earthlink.net](mailto:johncheryl@earthlink.net) Tel. (813) 309-2608 (Evening)  
Exhibit form on web site: <http://www.stpeteshellclub.org>

**Mar. 1 - 3, 2018**

**81st SANIBEL SHELL SHOW**, Sanibel, FL  
Sanibel Community Center, 2173 Periwinkle Way  
Mary Burton, 558 Foxcreek Drive, Lehigh Acres, FL 33974  
Email: [marybsanibel@hotmail.com](mailto:marybsanibel@hotmail.com) Tel. (239) 395-3626  
Website: [www.thesanibelcaptivashellclub.com](http://www.thesanibelcaptivashellclub.com)

**Mar. 8-10, 2018**

**MARCO ISLAND SHELL CLUB SHOW 38**, Marco Is., FL  
United Church of Marco Island, 320 North Barfield  
Jae Kellogg, 1402 N. Collier Blvd., Slip D-6, Marco Island, FL 34145  
Email: [pjsailkw@gmail.com](mailto:pjsailkw@gmail.com) Tel. (239) 253-8483

**Mar. 10-11, 2018**

**XXX PARIS INTERNATIONAL SHELL SHOW**, Paris, France  
Espace Charenton, 327 rue de Charenton, 75012 Paris  
Perrine Dardart, 8, Rue des Tilleuls, 02190 Pignicourt, France  
Email: [perrine.dardart@gmail.com](mailto:perrine.dardart@gmail.com) Tel. 33 (3) 23-22-46-41

**Mar. 17-18, 2018**

**3rd ANNUAL HAPPENING**, Phuket, Thailand  
Phuket Seashell Museum, Viset Road, Rawai Beach  
Tom Rice, P.O. Box 3, Rawai, Muang, Phuket, 83130  
Email - [ofseaandshore@gmail.com](mailto:ofseaandshore@gmail.com)  
Tel. 66 (76) 381 122

**Apr. 28, 2018**

**BRITISH SHELL COLLECTOR'S CLUB CONVENTION**,  
Essex, England  
Theydon Bois Community Centre, Essex  
Deborah Rolfe, 15 Dene Holm Rd, Northfleet, Kent DA11 8LF, UK

Email: [deborah@deborahrolfe.orangehome.co.uk](mailto:deborah@deborahrolfe.orangehome.co.uk)  
Tel. 44 1474 567 827

**May 4 - 6, 2018**

**TEXAS SHELLER'S JAMBOREE**, Corpus Christi, TX  
Comfort Suites Central, 538 South Padre Island Drive  
Theresa Stelzig Tel. (361) 946-6491 Email: [cstelzig@tvc.com](mailto:cstelzig@tvc.com)

**May 19-20, 2018**

**XXVIII BELGIUM INTERNATIONAL SHELL SHOW**,  
Antwerp, Belgium  
Sporthal Kattenbroek, Kattenbroek 14  
2650 Edegem, Belgium  
Charles Krijnen, Burgemeester Jansenstraat 10, NL-5037 NC Tilburg,  
Nederland  
Email: [bvc.shellshow@planet.nl](mailto:bvc.shellshow@planet.nl) Tel. 31 (13) 463 0607  
Website: [www.konbvc.be/shellshow.php](http://www.konbvc.be/shellshow.php)

**May 26-27, 2018**

**2nd NORTH EAST INTERNATIONAL SHELL SHOW**, Trieste, Italy  
Montedoro Shopping Center, Via Flavia di Stramare, Muggia  
Email: [nesietrieste@libero.it](mailto:nesietrieste@libero.it)

**June 2 - 3, 2018**

**GULF COAST SHELL SHOW**, Panama City Beach, FL  
Panama City Beach Senior Center, 423 Lyndell Lane  
Jim Brunner, 2511 Parkwood Drive, Panama City, FL 32405  
Email: [jili1043@comcast.net](mailto:jili1043@comcast.net) Tel. (850) 215-2086

**June 19-22, 2018**

**AMERICAN MALACOLOGICAL SOCIETY ANNUAL MEETING** joint with **WESTERN SOCIETY OF MALACOLOGISTS**, Honolulu, HA  
Details to be announced on AMS web site

**Jul. 7 - 8, 2018**

**TOWNSVILLE SHELL SHOW**, Townsville, Queensland, Australia  
Orchid Society Hall in Kirwan  
Jack Worsfold  
Email: [jnw\\_48@yahoo.com.au](mailto:jnw_48@yahoo.com.au)

**Jul. 14-15, 2018**

**KEPPEL BAY SHELL SHOW**, Yeppoon, Queensland, Australia  
Gus Moore Pavilion at the Yeppoon Show Ground  
Jean M. Offord, 277 McDougall St., N. Rockhampton, Qld. 4701, Australia Tel. 61 (7) 4928-3509

**Aug. 25-26, 2018**

**3rd ANNUAL WEST COAST SHELL SHOW**, San Diego, CA  
Casa Del Prado Rm. 104, 1650 El Prado, Balboa Park  
David P. Berschauer Tel. (949) 422-6585  
Email: [shellcollection@hotmail.com](mailto:shellcollection@hotmail.com)

**Aug. 30-Sept. 3, 2018**

**CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION**,  
San Diego, CA  
Sheraton San Diego Hotel & Marina, 1380 Harbor Island Drive, San Diego, CA 92101  
Registration: Nancy Hale (email: [tomnan12@att.net](mailto:tomnan12@att.net))  
Web site: [conchologistsofamerica.com](http://conchologistsofamerica.com)

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2017-11-16

# Shells are where you find them

Gene Everson

Many people have heard of the lobster walk, where one night of the year lobsters migrate in mass (Fig. 1). I have not seen lobsters migrating, but I have seen a *Strombus alatus* (fighting conch) migration. In January 1971, I took a visiting Canadian commercial diver friend for a dive off Ft. Lauderdale, Florida. I enjoy potluck, or dumb luck, diving - just trying an unknown spot. We threw the anchor over in 40' of water on a sand bottom and, reaching the bottom, saw hundreds, if not thousands, of fighting conchs (Fig. 2). They were all moving north, just inches or feet apart. I sent the other diver up to the boat for a larger bag and gathered up a few shells for the bag. We left the others. After getting back on the boat, I took several shoreline landmarks to find the spot again, and returned two weeks later. All of the live shells were gone, with one dead one remaining. I can only guess the reasons for the migration. The shells were moving north and slightly towards the shore. The nearest inlet was Hillsboro Inlet. I had snorkeled there a few years earlier and found several small, juvenile live shells. Perhaps the strombs were going there to spawn.

When I lived in Ft. Lauderdale, most of our night dives were between the 2<sup>nd</sup> and 3<sup>rd</sup> reefs at 65-70'. One night the large, black sea hares were migrating by the thousands. Again, just inches apart and all moving north. I saw one lying on its side and thought if it was dead perhaps something was feeding on it. When I rolled it over there was a lemon yellow *Vokesimurex rubidus* feeding on it (Fig. 3).

In March 1993, I stayed two weeks in Port Lincoln, South Australia, diving with the late Peter Clarkson (Fig. 4). A friend of his was visiting from New South Wales and one of his goals was to collect a number of *Amoria undulata* (Fig. 5) and pose them on the bottom for a photograph. By the time he collected enough of the shells, he was so cold that he could not stand to get in the water again. I was still under water so he threw all of the shells at my bubbles. What do you think would happen when about a dozen *Amoria undulata* hit the sand in 30' of water? Bury in the sand or crawl in various directions? No, they righted themselves and all, except one which seemed a bit stunned, crawled rapidly in the same direction. And I did not see any of them with a GPS.

On this same trip to South Australia, we were about to dive at Donington Island, Boston Bay, Port Lincoln. Peter Clarkson said to run my hand along the surface of the sand and I might feel the siphon of a *Typhis*. The bottom was at 30 feet, on sand. I had the suspicion that this may be like a Kentucky snipe hunt, so I was leery of someone seeing me and having a good laugh. After awhile, however, I did not



Fig. 1 – Spiny lobsters migrating in the wake of Hurricane Isaac, 2012, off Fort Lauderdale, Florida. Image by the Florida Marine Patrol.



Fig. 2 – *Strombus alatus* Gmelin, 1781 (fighting conch), observed ‘migrating’ in large congregations by the author. Image by L.A. Dawson, Wikipedia.com.



Fig. 3 – *Vokesimurex rubidus* (F.C. Baker, 1897) in the more typical pink to red coloration. Image courtesy of the Jacksonville Shell Club web site, [www.jaxshells.org](http://www.jaxshells.org).



**Fig. 4 – Peter Clarkson (1960-2012) from Esperance, Western Australia, was taken by great white sharks in 2012, south of Perforated Island, near Coffin Bay, in South Australia. Peter learned to SCUBA dive in 1975 and logged thousands of underwater hours commercially collecting abalone or chasing after *Spondylus*.**



**Fig. 7 – *Haustellum haustellum* (Linnaeus, 1758) feeding on squid eggs (Sulawesi, Indonesia) by Bernrad DuPont, Wikipedia.com.**



**Fig. 5 – *Amoria undulata* (Lamarck, 1804) (wavy volute) is not one of the rare more expensive volutes, but it is one of the more nicely colored and patterned. The living animal adds a bit of contrast to the shell. Image by Peter Southwood, Wikipedia.com.**



**Fig. 8 – *Pseudovertagus nobilis* (Reeve, 1855) is one of the larger and more impressive ceriths. Image courtesy of Guido & Philippe Poppe, [www.conchology.be](http://www.conchology.be).**

see anyone else, so I took off a glove and slid my hand along the sand. In a couple of minutes I felt the siphon of a *Monstrotyphis yatesi* (Fig. 6). It is true that shells are where you find them.

In November 2005, I was collecting in Sulawesi, Indonesia, with the late Marilyn Northrop. At 27 feet on sand among white soft coral fingers were eight *Haustellum haustellum* (Fig. 7). We were going to collect three each and leave two. I selected my three, and while Marilyn was deciding on hers, I looked into the coral fingers to see if we missed any. I saw several large, about 1 inch diameter, egg cases. I showed Marilyn and we both thought that they were the eggs of our large muricids. So, we carefully placed the last two *Haustellum* back where they were found. Unbeknownst to us the dive master had been watching. When we got back on the boat, he said, "You did not have to put those murex back. Those were not murex eggs, they were cuttlefish eggs". So instead of saving the murex, we helped kill the cuttlefish.



**Fig. 6 – *Monstrotyphis yatesi* (Crosse & P. Fischer, 1865) is a small exquisite shell found in only a few collections. Image from Ohio State University, [www.excelsior.asc.ohio-state.edu](http://www.excelsior.asc.ohio-state.edu).**



Fig. 9 – *Cribrarula cribraria* (Linnaeus, 1758) photographed in situ at night by COA member Charles Rawlings on a black sand slope off of Sulawesi. The mantle is partially opened. When the mantle encloses the shell it is a solid orange.



Fig. 10 – *Cribrarula cribraria* after it has been cleaned and the way it looks in countless collections. This is not a rare shell by any means, but it is a prize for its clarity of color and pattern. Image by H. Zell from Wikipedia.com.

I am a firm believer in the shell gods as their existence has been proven to me many times. In Hansa Bay, Papua New Guinea, in April 2005, I was on a night dive on a sand slope at 79-84 feet. There were many large circular, looping sand trails containing six large *Pseudovertagus nobilis* (Fig. 8). All the popular shell books list them as rare. Although in gem condition, they all had newly formed, paper thin lips. My thought was that, if I put them back, the shell gods may look kindly on me. In about two minutes I found another group of large sand trails with six specimens with mature lips. This has happened so many times that I don't think it is coincidental.

I began diving and shell collecting in Guam in 1966. One of the guys giving me diving and shelling hints said to never turn a rock and just look for a cone or a shiny cowrie. Always make sure you know what everything is because it is easy to miss something good that can be camouflaged. Months later, on an R & R in Okinawa, I was snorkeling at night. On the side of a rock or coral wall in 4 feet of water, I saw four orange lumps. I touched them, they were hard and did not move, so I thought they were hunks of coral. As I started to swim away I thought that I did not really know what they were, so I turned around and looked again and saw their mantles start retracting. They were my first *Cypraea cribraria* [now *Cribrarula cribraria*] (Figs. 9 & 10) and mark the beginnings of a fulfilling time of my life – both shell collecting and shell show displays.

Gene Everson  
gene.everson@gmail.com

Editor's comments: here is your author, COA member Gene Everson and a cone named in his honor.



Fig. 11 – Gene Everson at one of the many shell shows where he regularly has an award winning display of some of the numerous shells he has collected over the years.

Fig. 12 – *Conus eversoni* Petuch, 1987, the 18mm holotype from Honduras at the U.S. National Museum of Natural History, Smithsonian Institution, Washington, DC. Image courtesy of Dr Alan J. Kohn, Professor Emeritus, University of Washington.

# The Clio Prize: a new award and other news from the Philadelphia Shell Show

Paul Callomon

The 35<sup>th</sup> Philadelphia Shell Show will take place on October 27 and 28, 2018, at the Academy of Natural Sciences of Drexel University in Philadelphia. Since its inception in 1983, this has been one of the country's premier shell shows, attracting major scientific and artistic exhibits from a wide area. This year the Scientific Division is happy to announce a new award! The **Clio Prize** is named both for the Greek Muse of History and for a genus of planktonic snails whose extremely delicate shells are rarely found in prized perfect condition. It is sponsored by the Center for Molluscan Studies, a non-profit organization that supports molluscan research worldwide.

The Clio Prize acknowledges exhibits that engage the history of shell collecting and its connections with formal science. Unlike fields such as physics or medicine, zoology depends heavily on amateur workers who often become the leading experts in a particular group. Some of them travel widely and engage on an equal footing with fishermen, traders, and museum scientists, thereby embodying the ideal of "citizen science." Many professional molluscan scientists began as collectors and amateur naturalists and here is the chance to tell their stories.

Two great free resources for information about collectors and dealers are Tom Rice's *Shellers from the past and present* <https://www.conchology.be/?t=9000> and *2,400 years of Malacology* by Gene Coan and Alan Kabat [www.malacological.org/2004\\_malacology.html](http://www.malacological.org/2004_malacology.html).

The great collectors and dealers of history are a rich source of inspiration for scientific exhibits. Here are a few ideas, though you may come up with your own:

- All species described by the same author, with a biographical sketch (e.g. Reeve, Sowerby, Pilsbry, etc.).
- All specimens with original labels from a well-known historic dealer, with a biographical sketch (e.g. Hugh Fulton, Walter Webb, etc.). "Historic" in this case means a dealer who died or retired before 1990.
- Reconstructions of pages from famous shell books (e.g. Reeve's *Conchologia Iconica*; Sowerby's *Thesaurus Conchyliorum*; Abbott's *Golden Guide*, etc.) using real shells and reproductions of the original plates. Most nineteenth-century works are now freely available for download in color from the online Biodiversity Heritage Library: [www.biodiversitylibrary.org](http://www.biodiversitylibrary.org).
- The story of an obscure or unsung collector who nevertheless played a role in the field, told with related shells and materials.

Whatever format you choose, the subject can also be related to collecting and dealing in fossil shells!

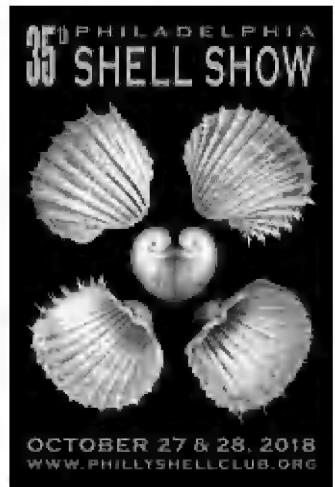
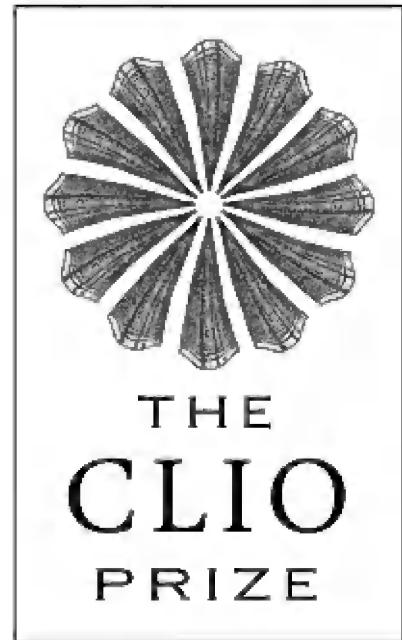
The Clio Prize takes its place alongside the other awards unique to the scientific division of the Philadelphia Show:

- The **R. Tucker Abbott Award**, for the best exhibit by a member of the Philadelphia Shell Club.
- The **Leonard Hill Award**, for the most aesthetically pleasing scientific exhibit of the show.
- The **John Dyas Parker Award**, for the most creative or educational exhibit in the scientific division.
- The **Robert B. Fish Award**, for the best small exhibit, not to exceed 12 feet in length.
- The **Conrad Award**, for the best paleontological exhibit.
- The **Pilsbry Award**, for exhibits that present new discoveries and ideas.

In addition the show of course continues to offer the **COA Award**, the **DuPont Trophy**, and the **Masters Award**, as well as Best Shell in Show for self-collected and non-self-collected.

In other news: for 2018, the Scientific Division will accept electronic, fax, and postal submission of entry forms. We will also offer a limited number of show cases for loan, allowing exhibitors to bring just their shells, labels and backboards. Priority will be given to those coming from afar, but otherwise it will be first come, first served. We will be announcing the number and size of available cases on the club's web site and Facebook page early in the New Year, so check back regularly!

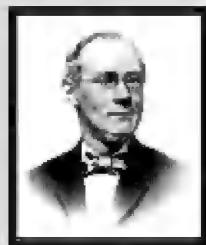
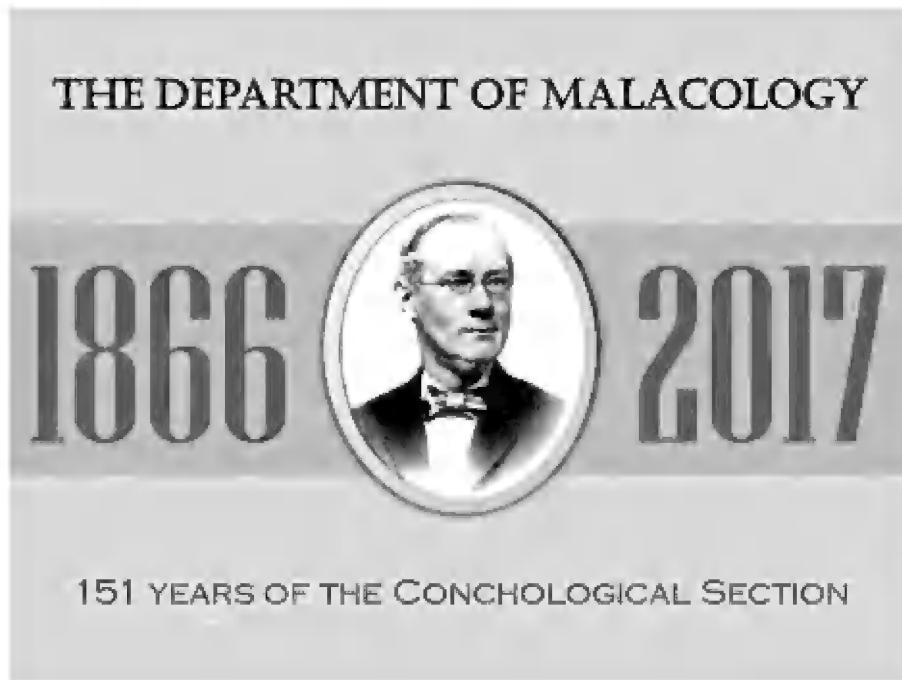
Paul Callomon  
Chair, Scientific Division  
2018 Philadelphia Shell Show  
[www.phillyshellclub.org](http://www.phillyshellclub.org)



Editor's comments: this is a bit of a departure from the typical *American Conchologist* fare, but I think worth inclusion in this issue. At the 2017, Key West COA Convention, Paul Callomon presented these slides in Power Point as he read the accompanying "Ode to the Academy." With Paul's dry (and sometimes not so dry) wit, we get a sense of the Academy of Natural Sciences of Drexel University in Philadelphia and their mission as it involves mollusks. I did a couple days research at the Academy a few years ago and I remember telling my wife when I returned that it was a truly pleasurable experience. To a person, the professionals and amateurs at the Academy were dedicated, cheerful, always helpful, and surprising knowledgeable. I think it suitable we acknowledge that institution in these pages.

## Ode to the Academy

Paul Callomon



TRYON



PILSBRY



ABBOTT



Davis



Roberson



Riesenberg

151 YEARS OF THE CONCHOLOGICAL SECTION

Draw nigh my dears, lend me your ears  
For I would have you hear  
Of exploits bold by young and old  
A tale of science neatly told  
And pleasing to the ear

It all began with one great man  
George Tryon was his name  
A man of industry and letters  
Who also wrote fine operettas  
And played the ol' shell game

He drew in clams and snails and such  
From each and all directions  
Full eighty thousand lots with ease  
Then founded the Academy's  
Conchological Section

Since Tryon lo! The years have rolled  
But we are proud to say  
The banner that he once unfurled  
As leader of the shelling world  
Is carried yet today

First came Pilsbry, sage and wise  
Our science's brightest star  
Who churned it out for seventy years  
And said rude things about those peers  
Whose work he thought sub-par

Then Abbott, he of vivid shirts  
Whose books we know so well  
Among collectors he's sore missed  
This mollusk-mad evangelist  
Who founded Sanibel

The three below are with us yet  
The chain down all these years  
Remains intact; it is unbroken  
Of each man much may be spoken  
Somewhere they can't hear

And here in short are all the things  
That keep us from retiring  
Science with its discipline  
Collections vast and glistening  
It's all so darn inspiring  
  
There is no profit in our work  
And money is the question  
But we care not, for that which guides us  
Is a noble light inside us  
That, or indigestion

Within the labyrinth unplumbed  
Of the molluscan bowel  
Lie hidden from our view exterior  
Trillions of cute bacteria  
Making odors foul  
  
Their sul'furous stink has made us think  
That these industrious bugs  
Can nibble into solid wood  
And turn it into something good  
Like Biofuels and drugs  
  
Who knows what other things we'll find  
What magic symbioses?  
By taking mollusks from the brine  
And probing where the sun don't shine  
With clothes-pegs on our noses

We temper zeal for commonweal  
With other vital tasks  
Mute snails cannot relate the story  
Of their rise to present glory  
Even if we ask  
  
So we must go within their cells  
And probe their DNA  
Whose coiled and stranded mystery  
Expressed as branches of a tree  
Makes all as clear as day (not)  
  
The silent snails that smoothly glide  
On slime through hill and dale  
Have kids who do not ride the plankton  
So it seems they must be ranked on  
Quite a diff'rent scale  
  
Barriers like streams and bogs  
Stand firmly in their way  
And if they thus can't travel far  
They speciate right where they are  
For life will find a way

## Current Projects

- Philippine symbiont ICBG
- Biodiversity and phylogeny of land snails
- Type imaging
- Alcohol collection overhaul
- Taxonomic work
- Cataloging incoming collections

## Philippine symbiont ICBG

- 8th year of research funded by NIH, DoE
- Natural products from molluscan symbionts, especially bacteria, for energy and medicine
- Collaboration with US and Philippine institutions (Oregon Health Sciences University; Northeastern University; University of Utah; University of the Philippines Marine Science Institute)
- Gary Rosenberg, Gizelle Batomalaque
- Field and laboratory work
- Spinoffs in phylogenetics and taxonomy

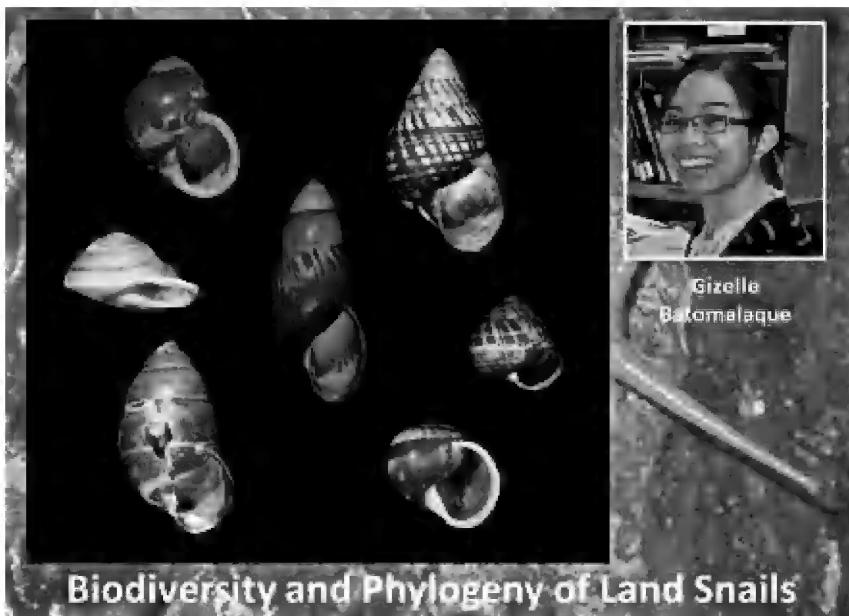
  
Makiri Sei

  
Gary Rosenberg

**Biodiversity and Phylogeny of Land Snails**

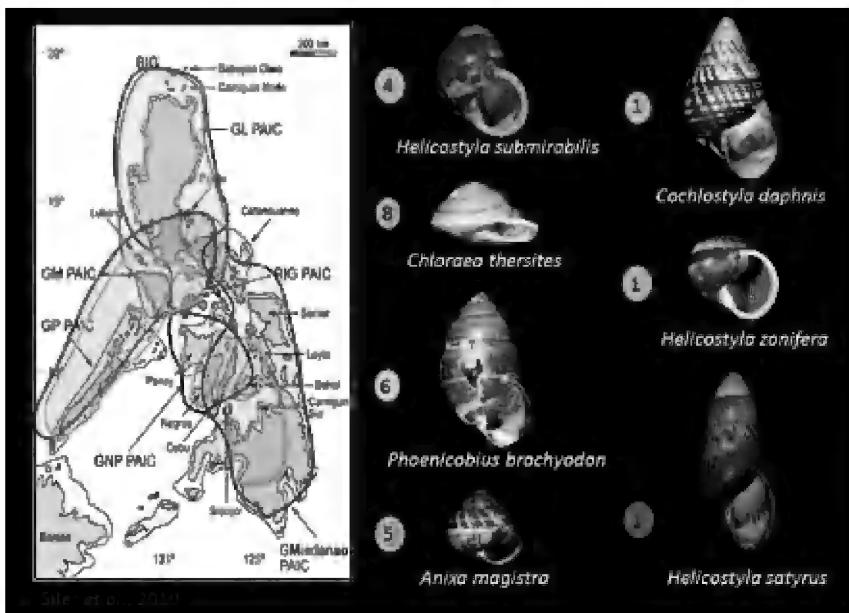
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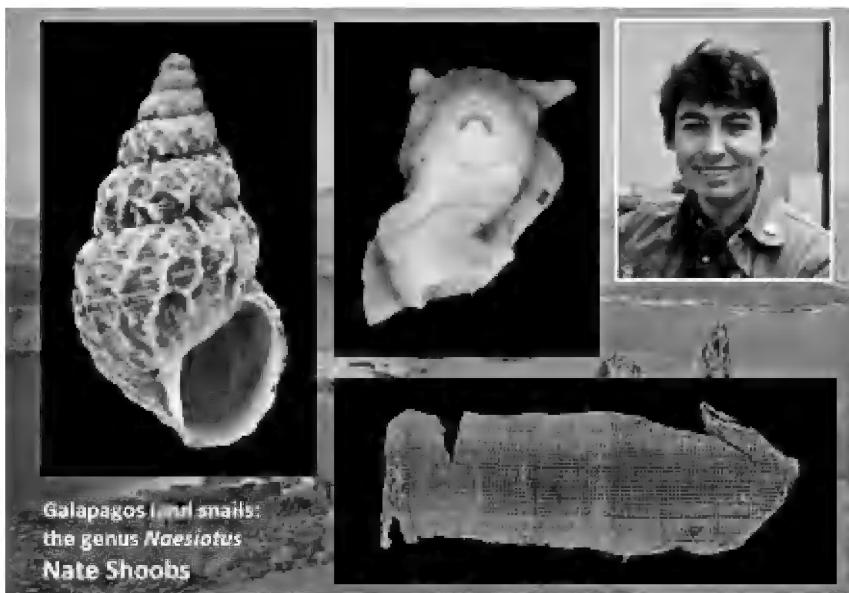


We might surmise: whence came these  
guys

So varied and diverse  
By what devices, ways and means  
Did they invade the Philippines  
And which ones got there first?



The bold Gizelle, that mad'moiselle  
Of steely-eyed resolve  
Has theorized the very order  
In which they all crossed the water  
Further to evolve



Half a world away, meanwhile  
Held firm in nature's thrall  
Young Nate has fixed his steadfast focus  
On the genus *Naesiatus*  
Familiar to you all

Their sculpture's odd - the ribs arranged  
Like blisters on the shell  
So far it seems we're at a loss  
That's normal in Galapagos  
The teeth are weird as well

What use is having all those types  
But hiding them away?  
Let truth unfold; let eyes behold  
The evidence of names of old  
From Lea to Thomas Say

Pilsbry named five thousand things  
And looks down from on high  
Prolific, yes, but not precise  
He never used the same words twice  
He's not our fav'rite guy

Some folks think man the masterpiece  
The last word of his maker  
We counter with this evidence  
That swampy marshland, deep and dense  
The works of H. B. Baker

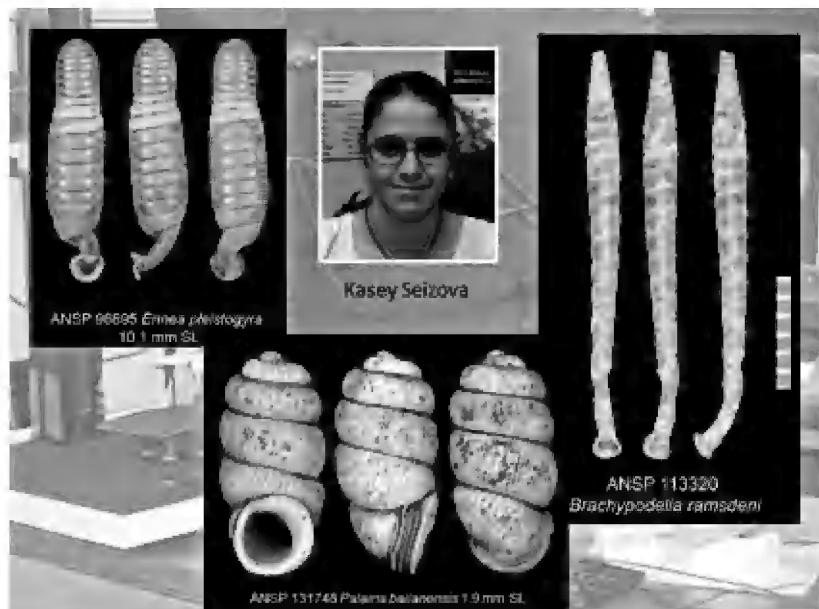
Back in the day, they'd rarely say  
Which specimen they meant  
But Ellen's eye and steel-trap mind  
Can any Gordian Knot unbind  
To everyone's consent

Then Kasey takes the types and makes  
Portraits so exact  
They seem to shine in living light  
And elevate mere human sight  
To arbiter of fact  
  
Her poses true and focus too  
Immortalizes them  
Even the tiniest don't defeat her  
Once below two millimeters  
There's the SEM

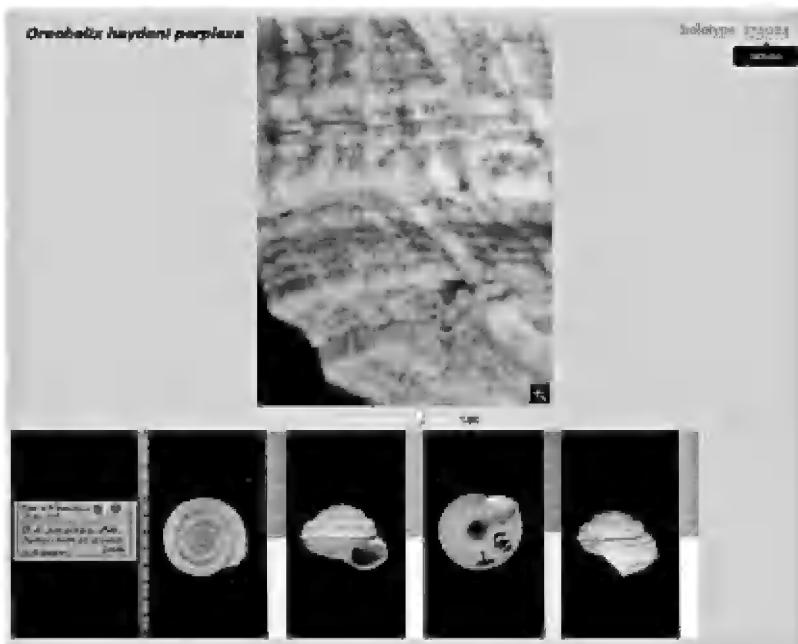
Yet what's the meaning of this work  
If none its worth behold?  
Out go the pictures, set by set  
Upon the billowing internet  
Free to all, not sold

## Type Imaging Project

- **Kasey Seizova and Ellen Wildner**, both former co-op students
- Increasingly cited in monographs and in descriptions of new species



Malacology Collection						THE ACADEMY OF NATURAL SCIENCES
Search Collection		Title		Collection Details		
Name	Location	Collector/Owner/Number	Collection Number	Entered Number	Entered Date	
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Where doubt persists there now exists  
 A way to see what's true  
 By taking figures, like a book  
 And zooming for a closer look  
 In details lie the clues

**Drexel BEES research students**

**Michelle Gannon**, photosymbiotic bivalves including *Corculum* and *Fragum*

**Lincoln Rehm**, mantle coloration and physiology of *Tridacna*

**Matt McDonald**, racemization dating of land snails

The young and eager, full of zeal  
 Immune to all suggestion  
 They probe, they test, they strive to learn  
 And seek us out at every turn  
 With darned impert'nant questions

The BEES department is the fruit  
 Of our Drexel alliance  
 Through it both increase their worth  
 The dept. of Biodiversity, Earth  
 And Environmental Science

**Volunteers curating collections**



**S. D. Kalcher collection**  
 Betty & Nick Ruggeri



**J. & C. Hemmen collection**  
 Richard Kaplan



**R. E. Petit collection**  
 Lin Floyd



**Michael Cahill collection**  
 Fiona Truong

And now we must take off our hats  
 And clarion trumpets sound  
 For volunteers, who down the years  
 Have shared with us our vale of tears  
 By no employment bound

They pack a lunch and cheerfully  
 Come weekly into town  
 And tackle tasks whose mighty scope  
 Would make Sisyphus give up hope  
 And suck his teeth and frown

They are our strength, our volunteers  
 For theirs is careful work  
 Replacing ancient vials and jars  
 And listening to NPR  
 Which is the only perk

## Collections Rehousing

- Dry collection re-housed; re-vialing continuing
- Electronic inventory in progress
- Now rehousing entire alcohol collection



**Tackling the Unionidae backlog**  
Art Bogan and Bob Howells, **Jane Heintz**  
advisors  
**Jane Heintz**  
Volunteer



## Alcohol collection overhaul



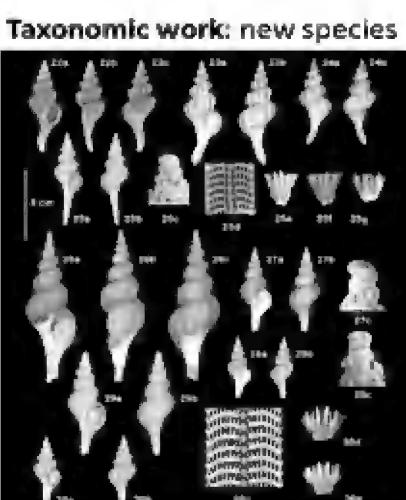
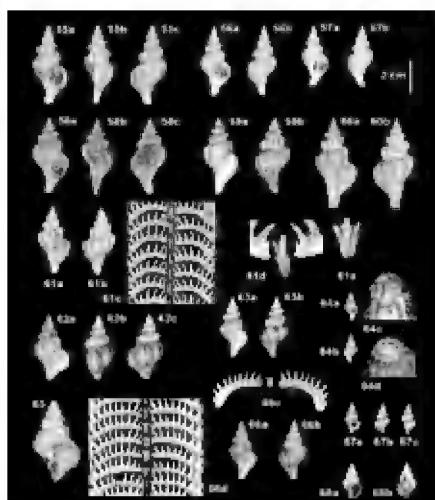
**Nasreen Phillips & Alex Bundrick**

Filled with ancient liquors gold  
The wet collection's jars  
Need topping up and wiping clean  
So they by all may yet be seen  
When we are off in bars

Nas and Alex see to it  
That all of this gets done  
For fifty thousand jars and vials  
Yet cheerfully with winsome smiles  
And drinking almost none

Now and then we get a yen  
To put all things to rights  
By naming shells that nameless lay  
Until the bright and fateful day  
They came into our sight

Yet there is none who knows it all  
(Though some thereto aspire)  
In blaming some benighted deity  
For the Fasci-o-lariidae  
I'm preaching to the choir



Callomon & Snyder, 2017: A new genus and nine new species in the Fasciolariidae from southern California and western Mexico. *Proceedings of the Academy of Natural Sciences* 165 (1): 55-90



And now, as promised, happy news  
Of a great resurrection  
Beneath the snow of dust and grime  
Laid hidden for a long, long time  
Our fossil shell collection

Its savior is a fossil gal  
And bona-fide professor  
With plans for students, digs and papers  
Field work and related capers  
Welcome Doctor Sessa



October's winds bring falling leaves  
But ere they start to blow  
Collectors from both near and far  
Stuff huge exhibits in their cars  
And head up for the show

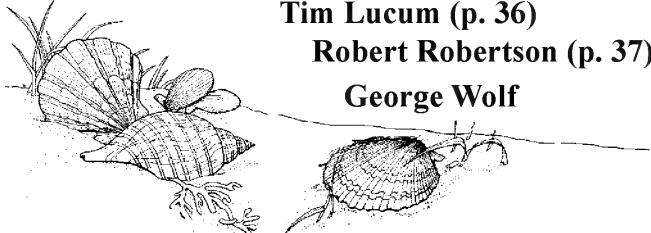
This year as ever we expect  
A range of fine displays  
As art and science lightly dance  
Entwined as if in deep romance  
If only for two days



And so dear friends that is the news  
From Philly in PA  
Where young and old their stories share  
And set aside their worldly cares  
At tea-time, anyway.

Apologies to Henry Wadsworth Longfellow and  
fulsome acknowledgment for digital wizardry to  
Academy web and database guru Steve Dilliplane.

Paul Callomon  
prc44@drexel.edu

**In memoriam:****Jean Dickman (p. 35)****Charles Finley****Wayne Humbird (p. 35)****Abe Levine (p. 35)****Tim Lucum (p. 36)****Robert Robertson (p. 37)****George Wolf****Jean Norton Dickman**

(84) was born in Rocky Mount, NC, on April 16, 1933, the daughter of the late Dr. John William Roy and Jaunita F. Norton. Jean moved to several states as a child during WWII for her father's job as an Army public health officer. She moved to Raleigh, NC, during her high school years and graduated from Broughton High School in 1951. She graduated from Duke University in 1955 with a major in sociology, where she was a member of Pi Beta Phi sorority. It was there she met and married the love of her life, Henry Dickman, from Florence, SC. During the next 26 years, Jean was a devoted Air Force wife, supporting Henry and his career in 13 locations, quickly establishing roots at home and in the community. She embraced the challenge of guiding the family to participate in many enriching activities that have had far-reaching influences on her children's lives. After Henry died in 1981, Jean received her M.S. in Urban Planning from UTSA and began a new life devoted to learning, adventure, and travel. Her many activities and duties, both volunteer and paid, include Toastmaster International, Girl Scout and Cub Scout leader, San Antonio Symphony Guild, President of the San Antonio Shell Club, President of Friedrich Wilderness Center (San Antonio), certified professional San Antonio tour guide, teacher, and certified tax professional. Her interests included collecting seashells, genealogy, playing bridge and worldwide traveling. Jean seemed to have an ever-present smile and a calm, relaxing demeanor welcomed by many at COA events. She was happiest when surrounded by family or at the beach.

**Jean Dickman**

(Larry) **Wayne Humbird** (69) of Lake Jackson, Texas, was born on June 27, 1948, to Irene Carley Humbird and Jim W. Humbird in Houston, Texas. He graduated from Lamar University in 1971 and retired from Dow Chemical in 2009 after 38 years. Wayne had a boisterous personality with a ready laugh and an outgoing nature that seemed to befriend all he met. He was extremely active in shelling activities and devoted countless hours to the Brazosport Museum of Natural Science. He and his wife Patty were well-known, well-respected, and well-loved fixtures at COA conventions. Wayne also volunteered his time as Vice President of COA. He is survived by his wife, Patricia of Lake Jackson, Texas; his sons, William of Clute, Texas; and David and wife Julie of Denver, Colorado; sisters Terry Andrews of Palestine, Texas; and Nancy Baker and husband James of Goliad, Texas; and granddaughter, Ruthie Humbird.

**Wayne & Patty Humbird won the COA Award at a recent shell show.**

**Abe Levine** (93) made his home in Quebec, Canada, but he and his wife Anita joined Suncoast Conchologists in November 1984, at our second meeting. He was determined we were going to succeed and was very aware that our new treasury was quite lacking in funds. He contacted a dealer friend in the Philippines and received a donation worth about \$80-\$90 – a beautiful golden cowrie, then *Cypraea aurantium* – now *Lyncina aurantium*. This large, orange cowrie was destined for a raffle, but not just any raffle! Our cowrie was featured at the next three meetings with chances at \$5 each. Yes, our treasury certainly received a huge boost! Abe donated his sizable shell collection to the Redpath Museum at McGill University in Montreal. This collection of shells is titled “Conchologycitus – The Abe Levine Shells,” forever commemorating Abe’s lifelong passion. The exhibit showcases over 2,000 gem-quality shells (of some 7,000 donated by

**Abe Levine with a few trophies from a Sanibel Shell Show.**

Abe). He is labeled "Quebec's premiere shell collector," in the museum literature. According to Dr. Tony Ricciardi, the Curator of Invertebrate Zoology at the Redpath Museum, this collection is "one of the finest in the world."

Abe wrote:

*In nineteen hundred and seventy two, a shell collector I became.  
And since that time my life and home have never been the same.  
Many moments of my leisure time, I spend among my shells.  
As I study and admire the gorgeous homes, wherein the Mollusc dwells.  
Ever since I was a youngster, Redpath visits gave me pleasure,  
making them the logical recipients of my conchological treasure.  
In nineteen hundred and ninety four, I had to face the truth:  
That I had just turned seventy, and getting a little long in the tooth.  
Your shells you can't take with you and although it will break your heart.  
The logical conclusion is with your shells you must start to depart.  
Since then I have made donations with pleasure as the number swells.  
The total of these donations are over seven thousand shells.  
McGill and Redpath have honoured me declaring this exhibit permanent.  
Therefore my shell collecting hobby represents time and money well spent.  
As this exhibit will be permanent my shells will no longer roam.  
They are resting in the shelter of their final Redpath home.*



**"Conchologycitus -- The Abe Levine Shells," at the Redpath Museum, McGill University, Montreal.**



**Tim Lucum**, a long-time member of the Pacific Northwest Shell Club (PNWSC) passed away just weeks short of his 100th birthday. Older PNWSC members will fondly remember Tim and his wife Lois, who passed away in 2011. Lois was the active sheller and Tim shared her love of shells with his support and his willingness to help in the club. Words that Evelyn Adkins wrote sixteen years ago about Tim and Lois, are as fitting today as they were then and are repeated here. "They joined soon after the PNWSC began, and were part of that early, dedicated cadre of members - and extremely active. This has been their gift to those of us who came, later, a viable, busy club. It is an on-going legacy of theirs that



**Tim Lucum**

has kept on giving for many decades and which we very much appreciate." Tim was unable to attend meetings in later years, but kept up with club happenings through the *Dredgings*. He greeted all with a smile and will always be remembered for that. By George Holm.

**Robert Robertson** (83) was born in Great Waldingfield, Suffolk, England, in 1934, the son of David William and Katherine Anne West. He came to the United States in 1952 and studied as an undergraduate at Stanford University. He graduated in 1956 with a



**Robert Robertson**

thesis on the mollusks of the Bahamas. He received his PhD from Harvard in 1960 and joined the Academy of Natural Sciences, Philadelphia that same year. He chaired the Department of Malacology from 1969 to 1972 and was an authority on molluscan larval development as well as the mollusks of the Bahamas. As the Chair and later as Curator Emeritus, Robert was a familiar and well respected figure at both AMS and COA meetings, and a member of the Marine Biological Association, United Kingdom. Aside from his writings on mollusks (he was a frequent contributor to *American Conchologist*) and his continued work with the Academy, he had a passion for both photography and classical music. His photographs of people interested in malacology and conchology, both professional and amateur, was termed by him, "The Rogues Gallery." Robert married Marian Ropes in 1959 (deceased 1975) and they had a daughter, Pamela Lucinda of Seattle, WA. He married Harriet H. Hopkins (Happy) in 1980, and their children include, Lynne A. Anderson (David) of Spotsylvania, VA, and Julia R. Lockwood (Neil) of Spokane, WA. His grandchildren include, Elijah Kaplan, Izador Kaplan, Aiden Kaplan, Timothy Anderson, Rebecca Anderson, Jonathan Anderson, Neil W. Lockwood III and Dean E. Lockwood. Robert had an easy-going manner and never stopped learning.

## COA Nominated Slate of Officers for 2018

COA Bylaws state:

Sec. A. Immediately following the annual meeting the Nominating Committee is appointed by the President with approval of the Executive Committee. It consists of three (3) persons, one of whom is chairperson. No currently serving officer may be a member of the Nominating Committee.

Sec. B. Nominees for the offices of President and Vice President must have served, or are presently serving, on the Board of Directors.

Sec. C. The Nominating Committee submits to the Board of Directors and makes available to the membership a full slate of candidates for office (namely President, Vice President, Secretary, Treasurer, and Trustee), each of whom has indicated a willingness to serve, at least thirty (30) days prior to the annual meeting.

Sec. D. Members in attendance at the annual meeting may be nominated from the floor during the meeting by written petition signed by five (5) members also in attendance. The nominees must signify a willingness to serve at the time of their nomination.

Sec. E. Members who indicate their willingness to serve and are not in attendance at the annual meeting, may be nominated by written petition. Any such petition verifies the nominee's willingness to serve by the nominee's signature, is signed by not less than five (5) members, and is submitted to the Nominating Committee prior to the meeting.

In accordance with the COA Constitution (amended and adopted 7 July 2008) and COA Bylaws (amended and adopted 2 August 2007), Harry Lee, President of COA, appointed a COA Nominating Committee (with Executive Committee approval) consisting of Dave Green (chairperson), Tom Grace and Rick Edwards. Their slate of COA officers nominated for the 2018 election is:

**President: Harry G. Lee**

**Vice President: Karlynn Morgan**

**Secretary: Amy Dick**

**Treasurer: Steven Coker**

**Trustee: Everett Long**

The election will be held during the business meeting at the 2018 COA Convention in San Diego. Thank you to the nominating committee and the nominated officers.

# Looking Forwards – COA 2018

## 29 August – 2 September 2018

David B. Waller<sup>1</sup> and David P. Berschauer,<sup>2</sup> Co-Chairs

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 dwaller@dbwimpmg.com

<sup>2</sup> 25461 Barents Street, Laguna Hills, California 92653  
 shellcollection@hotmail.com

This year's Conchologists of America Convention will be hosted by the San Diego Shell Club at the Sheraton Hotel across from the San Diego Airport, from August 29<sup>th</sup> to September 2<sup>nd</sup>, 2018. This convention follows the conclusion of the West Coast Shell Show on August 25<sup>th</sup> and 26<sup>th</sup> so that attendees may enjoy both events. COA field trips will be offered on Monday and Tuesday, August 27<sup>th</sup> and 28<sup>th</sup> to venues like Balboa Park, Scripps Aquarium, a San Diego dinner cruise, and a tour of the U.S.S. Midway. Convention goers may also explore on their own and visit any number of attractions and interesting sites, including Old Towne San Diego, the Gaslamp Quarter, SeaWorld, the San Diego Zoo, and many more.

The theme of this year's convention is "Treasures from the Sea." Following the opening ceremonies and a silent auction, the welcome party will take place on the evening of August 29<sup>th</sup>. There will be a "Funny Theme Hat" contest at the welcome party, so be sure to wear an award winning hat (related to "Treasures from the Sea"). The convention goes into full swing the next day with two action packed days of shell related programs, silent auctions, and an oral auction; all with amazing rare and unusual shells. Once again there will be many fantastic select shells from the Frederic Weiss legacy collection that was donated to COA last year and contributed to some amazing auction results in Key West, Florida. In addition, some of the member shell clubs will have tables at this event with souvenirs including t-shirts, shells, books, pins and more.

There will be a closing banquet and oral auction on the evening of August 31<sup>st</sup>. The logo for this year's COA Convention is an original piece of artwork painted by our very own Lisa Dawn Lindahl and is a Pacific octopus (*Enteroctopus dofleini*) wrapped around a red abalone (*Haliotis rufescens*) with a Catalina trophon (*Austrotrophon catalinensis*) in the foreground. The painting will be auctioned off at the oral auction.

The dealers' bourse will take place on September 1<sup>st</sup> and 2<sup>nd</sup>, so be sure to attend. Special thanks in advance to all of the volunteers of both COA and the SDSC who are working hard to will make this a great event.



The COA 2018 San Diego Convention will be at the Sheraton San Diego Hotel & Marina, located just across the highway from the airport on Harbor Island, 1380 Harbor Island Drive, San Diego, CA 92101. For reservations call 1-877-734-2726 and use the code COA when booking. The hotel provides shuttle service from the airport. Go to: <http://www.conchologistsofamerica.org/conventions/> for further details and registration information.

### 2018 COA Convention – San Diego

Field trips: 27 & 28 August

27 Aug: the world famous San Diego Zoo or the aircraft carrier USS Midway.

28 Aug: Balboa Park (gorgeous park with 17 different museums), the Birch Aquarium at Scripps Institution of Oceanography-University of California, San Diego, and dinner cruise on San Diego Bay.

COA Convention: 29 Aug – 2 September

29 Aug: opening ceremonies, silent auction & welcome party.

30 Aug – 31 Aug: shell programs, silent auctions, oral auction & banquet.

1-2 Sept: dealer's bourse.



The US Navy aircraft carrier USS *Midway* (CVB/CVA/CV-41) was the lead ship of her class and the largest ship in the world until 1955. Commissioned a week after World War II, the *Midway* was the first U.S. aircraft carrier too big to transit the Panama Canal. After 47 years of operation, including action during the Vietnam War and service as the Persian Gulf flagship in Operation Desert Storm, she was decommissioned in 1992. The USS *Midway* is now a museum ship.



Balboa Park is a 1,200-acre urban cultural park encompassing open space areas, gardens, walking paths, museums, recreational facilities, gift shops, restaurants, several theaters, and the world-famous San Diego Zoo. Reserved in 1835, the park is one of the oldest in the United States dedicated to public recreational use. The park is named for the Spanish maritime explorer Vasco Núñez de Balboa (a man we all learned about in grade school US history). There are several historic Exposition buildings in the park which led to the park and buildings being declared a National Historic Landmark and National Historic Landmark District in 1977 and placed on the National Register of Historic Places.

The San Diego Zoo, sitting on 99 acres in Balboa Park, houses over 3,700 animals, comprising more than 650 species and subspecies. The zoo was a pioneer in the concept of open-air, cageless exhibits that re-create natural animal habitats and is one of the few zoos in the world housing and successfully breeding the giant panda. In 2013, the zoo added a new Koalaifornia Adventure exhibit, providing an updated Australian animal experience. The newest exhibit, called Africa Rocks, opened in 2017.



Birch Aquarium at Scripps (sometimes referred to as Scripps Aquarium or Birch Aquarium) is the public outreach center for Scripps Institution of Oceanography at the University of California, San Diego. Accredited by the Association of Zoos and Aquariums, the aquarium has an annual attendance of over 439,000 and features more than 3,000 animals representing 380 species. The hill-top site provides views of the Scripps Institution of Oceanography campus and the Pacific Ocean.





Old Town got its name when the first port was built in the bay in 1869 and people and businesses moved to the new development, calling it New Town, San Diego. In 1968, the State of California dedicated the area as a State Historic Park and invested money in refurbishing old buildings and building replicas of many of the important 19th century buildings. Today the history is celebrated and remembered in the museums, restaurants, hotels, and specialty shops.



The Gaslamp Quarter is a 16½ block historical neighborhood in Downtown San Diego and is the site of several entertainment and night life venues, as well as scheduled events and festivals, including Mardi Gras in the Gaslamp, Street Scene Music Festival, Taste of Gaslamp, and ShamROCK, a St. Patrick's Day event. Stained glass windows, moldings, carvings, columns, and railings are just a part of the fantastic masterpieces that line the streets equipped with today's gaslamps, brick sidewalks, landscaping, galleries, theaters, boutiques and shops, and more than 100 restaurants, bars, and nightclubs.

SeaWorld San Diego is an animal theme park, oceanarium, outside aquarium, and marine mammal park, located inside the Mission Bay Park. It is owned by the City of San Diego, operated by SeaWorld Entertainment, and is an accredited member of the Association of Zoos and Aquariums (AZA). They have agreed to cease their orca breeding program, so the orcas on display now are the last that will be seen at Sea World. The park also houses belugas, dolphins, seals, sea lions, etc.





Just north up Interstate 15 is the Elfin Forest Recreational Reserve, a spectacular 784-acre open space park and recreational area. Pictured is Escondido Creek, one of the many attractions along numerous hiking trails. The Reserve has been designed to unify the interests of domestic water supply development, natural resources management and recreational opportunities. Park Rangers and docents conduct guided group tours to help promote environmental awareness and preservation of local watersheds. All Reserve wildlife and natural resources are fully protected so that future generations may enjoy these wonders.

**Point Loma** is a seaside community within the city of San Diego, California. Geographically it is a hilly peninsula bordered on the west and south by the Pacific Ocean, the east by the San Diego Bay and Old Town, and the north by the San Diego River. Point Loma has an estimated population of almost 50,000 and is home for two major military bases, a national cemetery, a national monument, a university, residential and commercial areas, and some rock and sand beaches surrounded by cliffs and weathered hillsides.



Register now for the 29 Aug-2 Sep 2018 COA Convention in San Diego. All of the required forms are available online at: <http://www.conchologistsofamerica.org/conventions/> Registration forms will also be included in the next issue of *American Conchologist*, but that is cutting things a bit close. Our conventions just seem to keep getting better, and there is plenty to do and see in San Diego. Come talk shells and see the sights.



## odds and ends

In closing are some shell related odds and ends. First we have two different shell sculptures sent in by Dr. Emily Vokes of Louisiana, and a rather beat up buccinid of questionablke identity offered by William Ritter of Oregon.



Well-known COA member Dr. Emily Vokes provided a couple images of larger than life molluscan shells in public venues. About the snail sculpture in the top image, she says, "This large bronze sculpture is titled 'History of the Conquest', by Hank Willis Thomas, 2017 – and is said to 'take aim at prejudicial historical depictions of the people of North Africa.' It is a recreation of a tiny 17th Century German artwork and I have absolutely no idea what he is saying! But it is a beautiful sculpture."

This piece is on the grounds of the New Orleans Jazz Museum at the Old U.S. Mint in New Orleans. The write up says that this work uses the same materials as typical monuments to military figures or colonial regimes to depict a small native African boy with a bow and arrow. The inflated size of this piece adds an "Alice in Wonderland" sense of fantasy.

The bottom left photo was taken in downtown Marble Falls, Texas, and shows Dr. Emily Vokes (right) and her sister Sis Hoskins (left) with a stylized "murex." It is part of an art installation in the "Historic Downtown" district. Emily stated, "I would have stolen it, if it fit in my purse! It did have the artist's name on it, along with the price, but I didn't think to note it. Sorry." Still, if you are ever in Marble Falls (on the Colorado River northwest of Austin) it might be worth a quick stop.



The shell image to the right was sent in by Will Ritter and he states, "Neptunaea, 118.5 mm, crabbed, trawled off Cape Disappointment, Washington State, U.S., in 40-45 fms (normal depth for a live specimen) – a favorite specimen of mine because of the terrible breaks and recoveries!" Presently unidentified, but similar to *N. ithia* (Dall, 1891) or *N. smirnia* (Dall, 1919).

José and Marcus Coltro



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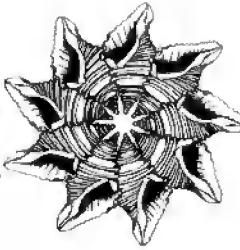
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# American NCHOLCIST



Quarterly Journal of the Gonchoholcists of America, Inc.

# CONCHOLOGISTS OF AMERICA, INC.



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world. In 1995, COA adopted a conservation resolution: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

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**Editor's comments:** If this issue feels a bit heavier than normal, it is! This is our first 48 page issue. Because of a lot of work by a number of volunteers, we have come a long way from the original black & white type-written four to eight page *Conchologists of America Bulletin*, first edited by Frank Nelson. Frank was editor from 1972 to 1976. That year, Tom Rice took over editorship, until 1978, when the helm was taken by Richard Goldberg. In 1982, Gary Rosenberg started as editor, but then passed the baton to Charles Glass and Robert Foster. These stalwart gentlemen saw in the first use of color – a painting of *Cypraea* (now *Perisserosa*) *guttata* Gmelin, 1791, by Patty McGehee. Lynn Scheu took over as editor in 1987 and changed the 'bulletin' to *American Conchologist* (not without a bit of a battle). Color was still quite expensive, so the journal was mostly black & white with occasional use of color. Lynn took the page count from 20, to 24, then to 32, and instituted a full color cover and four full color pages as standard. In 2002, after 15 years, Lynn stepped down and I took over as editor. Within a few years, digital printing meant that color was now reasonably priced, so the journal became full color. The page count began to increase when we found a new printing company that combined great pricing and quality printing.

The seven individuals I've mentioned as editor have by no means operated alone. There are countless unsung COA volunteers who make this all possible. Without the many authors, this journal would be dead before it began, but there are many other very important, if not critical, tasks performed, often thanklessly, that make this all happen. Lynn Scheu, along with husband Richard, is still involved and mails out each issue. Linda Powers stepped up when needed and prepares all of the mailing labels and corrects addresses. Amelia Ann Dick volunteers to chase down dealers and handle the advertising. And last, but far from least, Bruce Neville continues to proofread every issue and double check my English and use of scientific names. **I thank you all.**

**Front cover:** *Harpulina lapponica* (Linnaeus, 1767) photographed *in situ* by COA member Charles Rawlings. This volute was photographed in the waters off Sri Lanka, 2018 (see associated article on page 16). Of interest is the pattern difference between the animal and the shell – but both strikingly vivid. The other volute of interest during his trip(s) is of course, *Harpulina arausiaca* (Lightfoot, 1786). We have a couple great images of this uncommon volute (see page 19). Again, note the pattern and color difference between the animal and the shell. Our thanks to Charles for once again providing an interesting story and some magnificent images.

**Back cover:** *Vokesimurex dommoorei* (Bullis, 1964) feeding on a bivalve. Another great photograph by Charles Rawlings. This one was taken in 2011 during a diving trip to Trujillo Bay, Honduras.

# SHELLS DO NOT KNOW THEIR NAMES

## An introduction to molluscan taxonomy

Martin Avery Snyder

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Mollusks present special opportunities to study evolution and radiation of living and extinct organisms. These studies are facilitated by describing features that distinguish groups of similar organisms (*species*) and placing them into groups of related species (*genera* or higher categories), collectively called *taxa*. *Phylogeny* entails arranging taxa into an evolutionary tree, where individual species may be twigs on branches. *Taxonomy* examines what separates one twig from another and entails deciding what characterizes a particular species, in order to facilitate placing related species together. The degree of relationship of species to one another may be deduced by the proximity of their location on this tree. Finally, *nomenclature* involves giving names to the various branches and twigs of the tree. The use of Latin *scientific names* facilitates universal communication, transcending language and local customs.

This paper briefly describes how this is done.

Before considering the nature of the discipline of systematics (phylogeny and taxonomy) it is useful to briefly digress into mathematics. Some of mathematics deals with what one might call *actual facts*, exemplified by the trillionth digit of  $\pi$ . This digit may or may not be known, but it has a definite value that can be determined, and everyone will agree with the result. This fact is independent of whatever mathematical apparatus is used to uncover it, nor will it depend upon the particular person who carries out the investigation. This digit of  $\pi$  is an actual fact.

Much of mathematics is comprised of abstract constructs, such as the notion of parallel lines. After positing this abstract notion we can use known procedures to prove theorems about parallel lines. These theorems present facts, but of a different nature than the trillionth digit of  $\pi$ . These

facts are not independent of our investigations, and as was found in the first half of the 19<sup>th</sup> century (non-Euclidean geometry) the theorems that result depend upon the assumed underlying geometry. The point is that these are not actual facts, but instead are *created facts* which do not exist independently of our mathematical efforts.

Systematics tries to closely mirror evolution and the branching of groups. Phylogeny has to address the question raised by our mathematical example: is there some underlying classification of mollusks which can be discovered or are we choosing to create and impose this order in an attempt to model evolutionary relationships? The latter is the case and shells really do not know their names. We must assign names and erect a classification framework to be able to address the questions of radiation and evolution mentioned



The International Commission of Zoological Nomenclature (ICZN) is available online at: [www.iczn.org](http://www.iczn.org).

above. Although this exercise is not entirely arbitrary, different workers in the field may (and often do) arrive at somewhat different conclusions. We hope that the names we assign and our classification schemes will facilitate the consideration of questions such as these: When species migrate from one area to another what is their response to this new environment? How much must these species adapt and change before they are regarded as a new species (requiring a new name)? Can we track a group of mollusks over millions of years from ancient fossil material to material alive today? Do these studies have implications concerning Earth's climate and how adaptable these animals are to climate changes? Taxonomy is a discipline whose results constantly undergo revisions (usually of minor points) as new material (specimens) permits better agreement with Nature, and improves the accuracy of predictions which can then be tested, as is true of almost every science. Ultimately different methodologies lead to results that hopefully represent broad consensus views.

Since 1905 the nomenclature used to classify plants and animals has been organized and governed by the International Commission of Zoological Nomenclature (ICZN), which publishes a Code with rules to be followed to produce valid names. This code addresses the question of universality, but the correctness and usefulness of the resulting taxonomy described by the names is the domain of the individual practitioner. Early molluscan taxonomy was based on the animal's exoskeleton, the calcium carbonate shell, and this approach persists to the present time, although some workers starting in the early nineteenth century referred to the anatomy of the animals as well. Conveniently, this shell-based taxonomy permits similar treatment of both living and fossil species, the latter known only from their empty shells, containing no DNA. This is an important point.

In the later part of the 19<sup>th</sup> century, dredging and trawling produced more living mollusk material, and in 1945, Jacques Cousteau introduced SCUBA (self-contained underwater breathing apparatus, now usually written as scuba), facilitating underwater collection of live material by individuals. Notwithstanding, the emphasis of most molluscan taxonomy remained shell based, with a possible mention of the corneous operculum and the radula (teeth) of the animal, if this information was available. Morphology based taxonomy can go beyond a consideration of shell characters, and often will entail consideration of anatomical features discovered by dissection of the animal.

The International Barcode of Life project (iBOL) is also available online, [www.ibol.org](http://www.ibol.org).

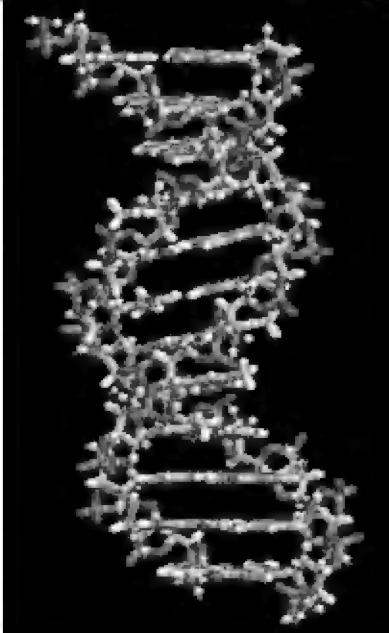


In Paris during the winter of 1942–1943, two Frenchmen, the engineer Émile Gagnan and Naval Lieutenant ("lieutenant de vaisseau") Jacques Cousteau (above), invented the aqua-lung. Image from Wikipedia.com.



**(Above): Francis Crick (L) and James Watson (R) at Cambridge University deduced the double helix structure of DNA that is so well known today. Image from Cold Spring Harbor Laboratory ([www.dnalc.org](http://www.dnalc.org)), creative commons authorization.**

**(Right): Stylized representation of the double helix structure of DNA. Image from Wikipedia.com**



Building on early 20<sup>th</sup> century work, Watson and Crick deduced in 1953, the intertwined double helical structure of the deoxyribonucleic acid molecule (DNA) that governs the genetics of an organism. In what has become a fairly common and reasonably priced procedure this molecule (or parts of it) can be sequenced. A particular gene, cytochrome c oxidase subunit 1 (COX1 or MT-CO1), can be used to determine to what degree of confidence two specimens represent the same or different species. This gene mutates fairly quickly and is used as the *barcode of life*. Other genes are often examined as well and used as markers. This sequence can lead to identification of a specimen if it has a barcode that matches a known named species (if its barcode is known), but generally the procedure can produce no more than comparative taxonomic information. To facilitate genetic identification of material the International Barcode of Life project (iBOL) collects gene sequences for a large variety of species together with an image of the actual specimen

from which the genes were obtained. Until (and if) the iBOL library is large enough to include a majority of living species it will not be a definitive tool for species identification. At the present time the existing genetic databases are not large enough.

Most genetic analysis is used to affirm or reject taxonomic hypotheses, and these hypotheses are usually formed by classic morphological analysis of shells. Here is the usual process:

\* Material is analyzed and, based on comparison of shell characters, is provisionally identified as species X or possibly as a new species, both in genus Y. This is classic taxonomy, and this analysis produces a hypothesis with conclusions which are often published, subject to confirmation or modification based on genetic analysis of the animal. The radula and operculum are often examined and may be broadly confirmatory.

\* If properly preserved animal tissue is available, DNA is removed and sequenced. This process is now fairly simple and inexpensive. The DNA sample is usually prepared in an external laboratory and analyzed with the aid of publicly available computer programs. The results are presented together with already known genetic information from other related species, and often with one or two *outlier* species, not in genus Y, to check the analysis. Standard (packaged) statistical tools are used to indicate the statistical confidence that one can have in the original hypothesis, or to suggest new relationships beyond those hypotheses.

The important point is that one can seldom draw information directly from a DNA analysis as to whether one's material represents a new species. It can only determine *relationships* and verify hypotheses (unless it is already in the Barcode of Life library). Usually these hypotheses come from morphological analysis. The takeaway is that the well-equipped taxonomist will be able to formulate hypotheses based on morphological analyses and then, for Recent material, verify these hypotheses using genetic analyses. The resulting classifications are just a construct to facilitate discussion, and the shells do not know their names.

Several people read drafts of this paper and offered helpful criticism and suggestions which improved the paper. I wish to thank Philippe Bouchet (MNHN), Paul Callomon (ANSP), Bill Lyons (St. Petersburg, FL), Gary Rosenberg (ANSP) and Geerat Vermeij (UC Davis).

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# A *Busycon* ‘name game’

Thomas E. Eichhorst

There was recently a question asked on the list-serve *Conch-L* about the status of the family name *Busyconidae*. The ‘name game’ can be both confusing and frustrating to both the amateur shell collector and the professional malacologist. As Martin Snyder writes in this issue of *American Conchologist*, SHELLS DO NOT KNOW THEIR NAMES - An introduction to Molluscan Taxonomy (p. 4). Whether cataloging a shell drawer at home or a specimen cabinet in a museum, or preparing labels for a local shell show or working on nomenclature for a professional research paper or book – changes in systematics (phylogeny and taxonomy) usually impact nomenclature. The International Commission of Zoological Nomenclature (ICZN) has, since 1905, regulated “...the correct use of scientific names of animals” and provides “...a set of rules for the naming of animals and the resolution of nomenclatural problems.” What this means is there is a set of agreed upon written rules that must be followed for a scientific name to be valid and available (following the ICZN rules and properly published). This does not mean, however, that such a name (even if following all of the rules) will be accepted as the correct name for a particular animal. It could be unaccepted because there is an earlier valid taxon, making it a junior synonym, or because the proposed name is one which the ‘community’ refuses to accept. As an example of this last, the genus *Conus* has been split into four or even 119 genera (see Walls, J.G., March 2016, *Cone Shells: Mumblings 36-plus years later, American Conchologist* 44: 2). General acceptance of the higher number has not followed and most dealers and collectors probably still use a single genus.

So back to *Busyconidae* and its status. The first response referenced the World Register of Marine Species (WoRMS) at: <http://www.marinespecies.org>, where it is listed as a subfamily, *Busyconinae*, within the family *Buccinidae*. WoRMS has become widely recognized as THE molluscan taxonomic resource. It is not perfect, but it is constantly updated and self-correcting. What does this mean to the average shell collector? A lot!

Let us suppose you have a lightning whelk in your collection. If it is used as a planter on a window sill, then you may not care about the shell’s proper scientific nomenclature. You know it is a lightning whelk and that is sufficient data for a curio. If you are like most of us, however, you maintain a data slip on your whelk with locality data, date collected, and the scientific name. You also probably have it catalogued in a larger database with the scientific names grouped by genus under the family name. Changes in species, genus, or family name can cause a bit of confu-



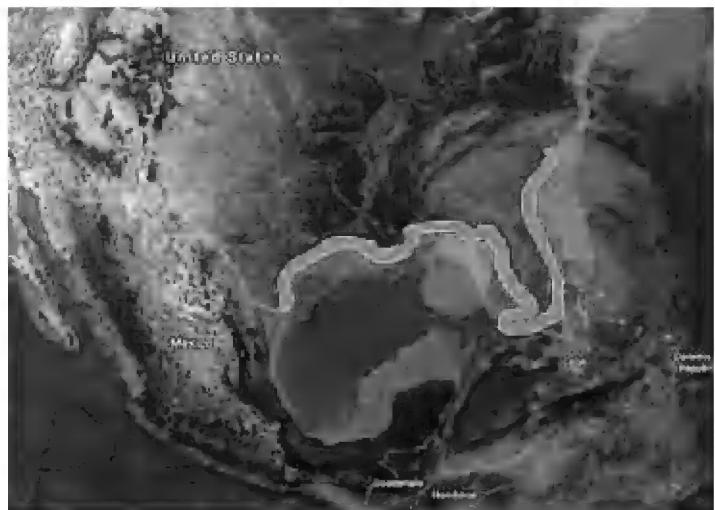
1. Lightning whelk in the author’s collection (15 in.), collected by a shrimp trawler off Port St. Joe, FL., 1969. at unknown depth.
2. Model of a living lightning whelk (92mm), artist unknown (sadly, not the late Bobbi Cordy).

sion in your nice catalogue scheme; and changes in each of these have certainly been the norm with the familiar lightning whelk.

To illustrate this, let us assume that you collected the lightning whelk shell in the 1960s from a shrimper in

Florida (as I did). To identify your new acquisition you may have used a popular book by Julia Ellen Rogers, *The Shell Book* (1937). Here on page 66 (illustrated a few pages later, plate un-numbered) you would have found the name *Fulgur perversa* (Linnaeus, 1758) with a listed range of “Florida,” in the family Buccinidae. The author Linnaeus is in parentheses because he originally named the species in the genus *Murex*. So here is our first data slip:

Family: Buccinidae  
 Scientific name: *Fulgur perversa* (Linnaeus, 1758)  
 Common name: Lightning whelk or left-handed whelk  
 Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.



**The range of *Busycon contrarium* (Conrad, 1840) according to Abbott (1954), South Carolina to Florida and the Gulf States.”**

Then you are told by a friend that you have the name incorrect. So you purchase a newer shell book by R. Tucker Abbott, *American Seashells* (1954). On page 236 (illustrated on plate 23(k) you find your lightning whelk has the scientific name of *Busycon contrarium* (Conrad, 1840) with a listed range of “South Carolina to Florida and the Gulf States” and the family is now Melongenidae. Abbott warns his readers not to confuse *B. contrarium* with the more rare *Busycon perversum* (which had different names if “... left-handed (formerly known as *[Flugur] kieneri* Philippi, 1848) or right-handed (formerly known as *[Fulgur] elicians* Montfort, 1810).” What has happened? First, *Busyconidae* Wade, 1917 (1867), was replaced by *Melongenidae* Gill 1871 (1854).<sup>1</sup> The genus *Fulgur* Monfort 1810, was replaced by *Busycon* Röding, 1798, as the earlier valid name.<sup>2</sup> Furthermore, Abbott (and others) determined the species name *perversa* applied only to a rarely encountered species differentiated mainly by a mid-whorl bulge. Abbott does not mention that Conrad’s *B. contrarium* was named as a Miocene fossil and is unaware that Hollister (1958), in his revision of the genus *Busycon*, will determine that the fossil type specimen of *B. contrarium* was significantly different from the Recent lightning whelk species for which he proposes the name *Busycon sinistrum* Hollister, 1958. Hollister also introduces the subgenus *Sinistrofulgur*, which was ignored for several years, but 50 years later (now) shows up as the accepted genus for the lightning whelk. If you, as a collector, were aware of the Hollister work, you had a decision to make - *B. contrarium* or *B. sinistrum*. It means changing

the data slip either way, but Abbott’s use of *B. contrarium* seems to be the most common usage, so we will go with that - as did many others. Abbott’s was thought of as the conservative approach compared to Hollister (Pain, 1962: 515). We now have hints of the turmoil surrounding the scientific name of the lightning whelk beyond the changes in Abbott (1954). Your updated data slip looks like this:

Family: Buccinidae-Melongenidae  
 Scientific name: *Fulgur perversa* (Linnaeus, 1758)  
*Busycon contrarium* (Conrad, 1840)  
 Common name: Lightning whelk or left-handed whelk  
 Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

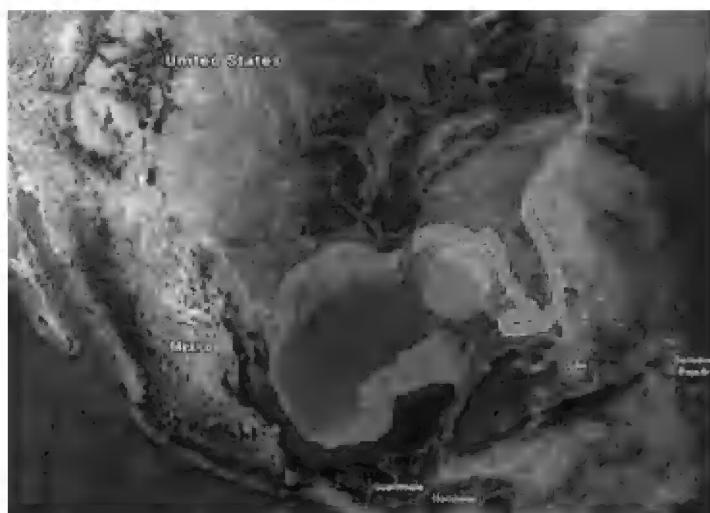
By the 1970s, you might have purchased a small book by Jean Andrews (1971), titled *Sea Shells Of The Texas Coast*. Here you find more hints of turmoil over the scientific name of the lightning whelk. Dr. Andrews is aware of the Hollister paper, but argues that the Miocene fossil name *B. contrarium* is the valid name for the Recent species instead of Hollister’s *B. sinistrum* and that the form found in Texas waters is *Busycon pulleyi* Hollister, 1958. This will eventually make its way into Texas state law (passed in 1987) as *B. perversum pulleyi* - the Texas state shell. To make matters

<sup>1</sup>According to Article 40 (2) of the ICZN, a family name cited with two dates (the second in parentheses) means the name “...was replaced before 1961 because of the synonymy of the type genus, the replacement name is to be maintained if it is in prevailing usage. A name maintained by virtue of this Article retains its own author [and date, the first date] but takes the priority of the replaced name [the date in parentheses]...”

<sup>2</sup>Röding authored a shell manuscript, *The Museum Boltenianum*, in 1798, that was ignored for many years, often incorrectly attributed to Bolten as the author, and when recognized it was dismissed as being just a catalogue with no nomenclatural validity. In 1915 William Healey Dall wrote *An Index to the Museum Boltenianum*, wherein he established Röding as the author and demonstrated the validity of many of the taxa in Röding’s work. Röding’s genus *Busycon* was deemed synonymous with the genus *Fulgur* and as the earlier (senior) name had priority.

just a bit more confusing, the second and much improved edition of Abbott's tome (1974) retains the taxonomy of his first edition, but with a few important caveats. First, he now mentions that Conrad's *B. contrarium* was named as a fossil, and he distinguishes two forms in the living specimens: a smooth shouldered form called *B. aspinosum* Hollister, 1958 and a spined shouldered form called *B. sinistrum* Hollister, 1958. About this latter he admits, "...some workers may wish to consider it a separate species." Second, he ends his paragraph on the lightning whelk with, "Some authorities feel that the common Lightning Whelk should be called *perversum* Linné, an idea not without technical merit." (Abbott, 1974: 222) Third, he considers *B. perversum pulleyi* a valid subspecies that "...occurs from Breton Sound, Louisiana to Texas, and to the north Mexican coast...and in the northern part of its range, this subspecies blends in with *contrarium*, giving rise to the possibility that this complex is one species, namely *perversum* Linné." (Abbott, 1974: 223)

Also during this time frame, Percy A. Morris published the widely popular *A Field Guide to Shells of the Atlantic and Gulf Coasts and the West Indies*, 1973. Morris agrees with Abbott's use of *B. contrarium*. S. Peter Dance published his *The Collector's Encyclopedia of Shells*, 1974), where he also agrees with Abbott's use of *B. contrarium*, but limits the range to "Caribbean (Florida)." The taxonomic waters around the common lightning whelk have become a bit muddied, but our data slip stays as written.



**The range of *Busycon contrarium* according to Dance (1974), "Caribbean (Florida)."**

Still in the 1970s, William Emerson and Morris Jacobson (*Guide To Shells*, 1976) agreed with Hollister that the Miocene fossil *B. contrarium* was an extinct species and not the correct name for the Recent lightning whelk, which they called *B. perversum*. They brought back the name *B. kieneri* (Philippi, 1848) for what Abbott and Hollister called *B. perversum* (these two considered *B. kieneri* a junior synonym of *B. perversum*). Now we have

some data slip changes:

Family: Buccinidae-Melongenidae  
 Scientific name: *Fulgur perversa* (Linnaeus, 1758)  
*Busycon contrarium* (Conrad, 1840)  
*Busycon perversum* (Linnaeus, 1758)  
 Common name: Lightning whelk or left-handed whelk  
 Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

Moving into the 1980s, we begin with two popular shell books published in 1981. There was Jerome Eisenberg's, *A collector's guide to Worldwide Seashells* in 1981, and the Abbott and Dance tome, *Compendium Of Seashells*, also first printed in 1981. If you did not want to change your data slip, you went with Eisenberg, who named the lightning whelk, *B. perversum*. On the other hand, if you followed Abbott and Dance, then you had to go back to the *B. contrarium* name. Since we are talking of contrary and perverse, let's say we went with Eisenberg, thus no data slip changes needed. Also in the 1980s was Vaught's *A classification of the living Mollusca* (1989) wherein she laid out the classification of Mollusca for genera and above. She kept *Busycon* in the family Melongenidae. So our data slip is still good, unless your lightning whelk was collected along the Texas coast. In that case the "correct" name is *B. perversum pulleyi* (according to 1987 Texas state law). Our shell was collected in Florida, so we can stay with the *B. perversum* name and not have to change our data slip, but certainly this situation cannot last.

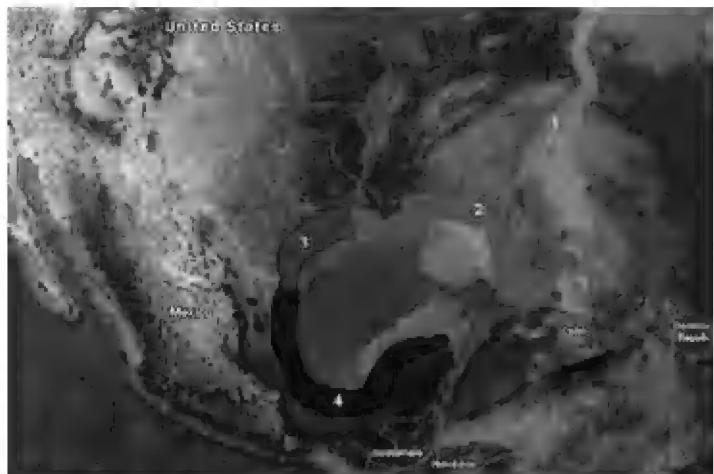
Through the 1990s the *B. contrarium* name seems to have held sway (thus adding pressure for yet another data slip change), as evidenced by the online listing of the Smithsonian Marine Station, which also lists a range of "... along the North American coastline from New Jersey to Texas. They are commonly encountered in estuaries, creeks and around oyster bars." A very nicely illustrated book by Kenneth R. Wye (*The Encyclopedia of Shells*, 1991) lists *B. contrarium* with a range of the "Southeastern USA." Surprisingly, neither Gary Rosenberg in his 1992, *The Encyclopedia of Seashells*, nor Abbott in his 1993, *Seashells of the Northern Hemisphere*, mention the lightning whelk, both listing just the channeled whelk, *Busyctopus canaliculatus* (Linnaeus, 1758) and Abbott adding the knobbed whelk, *Busycon carica* (Gmelin, 1791). So bowing to the weight of written evidence we once again change our data slip:

Family: Buccinidae-Melongenidae  
 Scientific name: *Fulgur perversa* (Linnaeus, 1758)  
*Busycon contrarium* (Conrad, 1840)  
*Busycon perversum* (Linnaeus, 1758)  
*Busycon contrarium* (Conrad, 1840)  
 Common name: Lightning whelk or left-handed whelk  
 Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

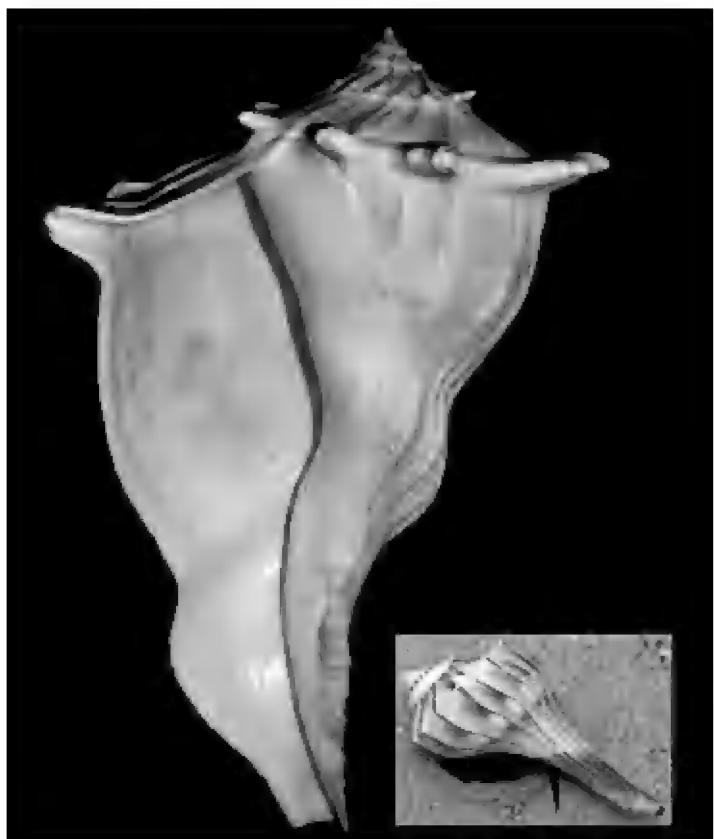
Now in the 2000s, we can start using some Internet sites to ‘help’ us with our shell identification. Let’s start with a site recognized for its excellence - The Academy of Natural Sciences, Malacolog, now up to version 4.1.1 (<http://www.malacolog.org>). The Malacolog site was established by Gary Rosenberg in the early 1990s as “...a database for research on the systematics, biogeography and diversity of mollusks...in the western Atlantic from Greenland to Antarctica.” It is constantly updated and improved. It lists our lightning whelk as *Busycon sinistrum* Hollister, 1958, with synonyms that include: *Busycon contrarium* auct. non Conrad, 1840; *Busycon aspinosum* Hollister, 1958; and *Sinistrofulgur sinistrum* (Hollister, 1958). The site goes on to state, “Comments: Misidentification; *Busycon contrarium*, often used for this species, is an extinct fossil species.” There is also a reference to findings by Wise et al., 2004, which we will get to later, and a given range for this species that is important, “...East Florida, West Florida, Florida Keys...Alabama.” This leaves room for separate species ranging up the Atlantic coast and down to the Yucatan Peninsula. Indeed, Malacolog lists four sinistral lightning whelk species: *Busycon laeostomum* Kent, 1982<sup>3</sup>, from New Jersey to Georgia; *Busycon sinistrum* from East Florida to Alabama; *Busycon pulleyi* as occurring from Louisiana and Texas, to Mexico; *Busycon perversum* from Campeche to Yucatan, Mexico. So due to the locality data on our shell, the data slip changes yet again. A bit of added support comes from Tunnell et al. (*Encyclopedia of Texas Seashells*, 2010). The authors describe *B. pulleyi* as a standalone species, fully agreeing with the Malacolog listing of sinistral *Busycon* species known as lightning whelks.

Family: Buccinidae-Melongenidae  
 Scientific name: *Fulgur perversa* (Linnaeus, 1758)  
*Busycon contrarium* (Conrad, 1840)  
*Busycon perversum* (Linnaeus, 1758)  
*Busycon contrarium* (Conrad, 1840)  
*Busycon sinistrum* Hollister, 1958

Common name: Lightning whelk or left-handed whelk  
 Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.



The ‘lightning whelk’ ranges according to Malacolog and WoRMS: 1. *Busycon laeostomum* Kent, 1982, from New Jersey to Georgia; 2. *Busycon sinistrum* from East Florida to Alabama; 3. *Busycon pulleyi* from Louisiana and Texas, to Mexico; 4. *Busycon perversum* from Campeche to Yucatan, Mexico.



*Busycon perversum* (238mm), Yucatan Peninsula, and a living specimen lacking the shoulder spines and mid whorl bulge. Courtesy of [www.jaxshells.org](http://www.jaxshells.org).

<sup>3</sup>Many readers will not be familiar with *Busycon laeostomum*, named by Kent in 1982, from specimens occurring from New Jersey to Virginia, with the appearance of a sinistral *B. caurica* (Gmelin, 1791) and other traits like *B. perversum*, or *B. sinistrum*, or *B. pulleyi*, etc. This is not a common species and there have been questions about its status. It is presently accepted on WoRMS as *Sinistrofulgur laeostomum* (Kent, 1982). Harry Lee and Bill Frank (a) (online, no date) cover this quite thoroughly (<http://www.jaxshells.org/blaeosto.htm>). They also provide a succinct discussion of the taxonomic woes surrounding the lightning whelk (<http://www.jaxshells.org/trava.htm>).

*perversum* that covers the entire range with various forms. If you choose Malacolog, then you have four species that cover this same range. Since we just changed the data slip to *B. sinistrum*, let's stay with that and avoid a change back to *B. perversum*.

The most recent published attempt to straighten out the phylogeny of the *Busycon* whelks is Petuch et al., (2015, not seen), The living and fossil *Busycon* whelks: Iconic mollusks of eastern North America. The authors pretty much follow the Malacolog layout, except they elevate Hollister's subgenus *Sinistrofulgur* to full genus status. A final check with WoRMS lists the same four species found on Malacolog, but with *Sinistrofulgur* instead of *Busycon* as the genus and the family is now Buccinidae with *Busyconinae* as a subfamily. My data slip now has text on both sides, with the reverse side carrying a comments section about lightning whelk phylogeny and nomenclature.

Family: Buccinidae Melongenidae-Buccinidae  
Subfamily: Busyconinae  
Scientific name: *Fulgar perversa* (Linnaeus, 1758)  
*Busycon contrarium* (Conrad, 1840)  
*Busycon perversum* (Linnaeus, 1758)  
*Busycon contrarium* (Conrad, 1840)  
*Busycon sinistrum* Hollister, 1958  
*Sinistrofulgur sinistrum* (Hollister, 1958)  
Common name: Lightning whelk or left-handed whelk  
Locality: off Port St. Joe, Florida, by shrimp trawler at unknown depth, Oct 1969, 15.2 in.

Four sinistral closely related whelks: *Sinistrofulgur laeostomum* (Kent, 1982), occurring from New Jersey to Georgia; *S. sinistrum* (Hollister, 1958), Florida to the Gulf States; *S. pulleyi* (Hollister, 1958) Texas and surroundings, and *S. perversum* (Linnaeus, 1758), Yucatan Peninsula and surroundings. The 'old' name *Busycon contrarium* (Conrad, 1840) is a fossil species.

Should you now run to your shell collection and re-label your lightning whelks? In answer I give you a comment by Paul Callomon of the Academy of Natural Sciences of Drexel University. In a recent email posting on this very subject, he wrote: "Which one you prefer in any given case should ideally reflect your informed judgment having reviewed the evidence for all the alternatives, but of course most of us will just adopt the one whose author we happen to know." (Conch'L posting, Busyconinae, 13 May 2018, 2:03 PM) Paul followed up with: "The old adage 'If you want to hear God laugh, tell him your plans' could be modified to 'If you want to see Nature smile, show her your phylogeny'..." (Conch'L posting, Busyconinae, 14 May 2018, 11:54 AM). So rest assured, this is not the last data slip change for this species. Label your specimens in a manner that makes sense to you. The shell names are there for us – a way of making sense and providing some order. In the end, the name may be the least important piece of information on the data slip.

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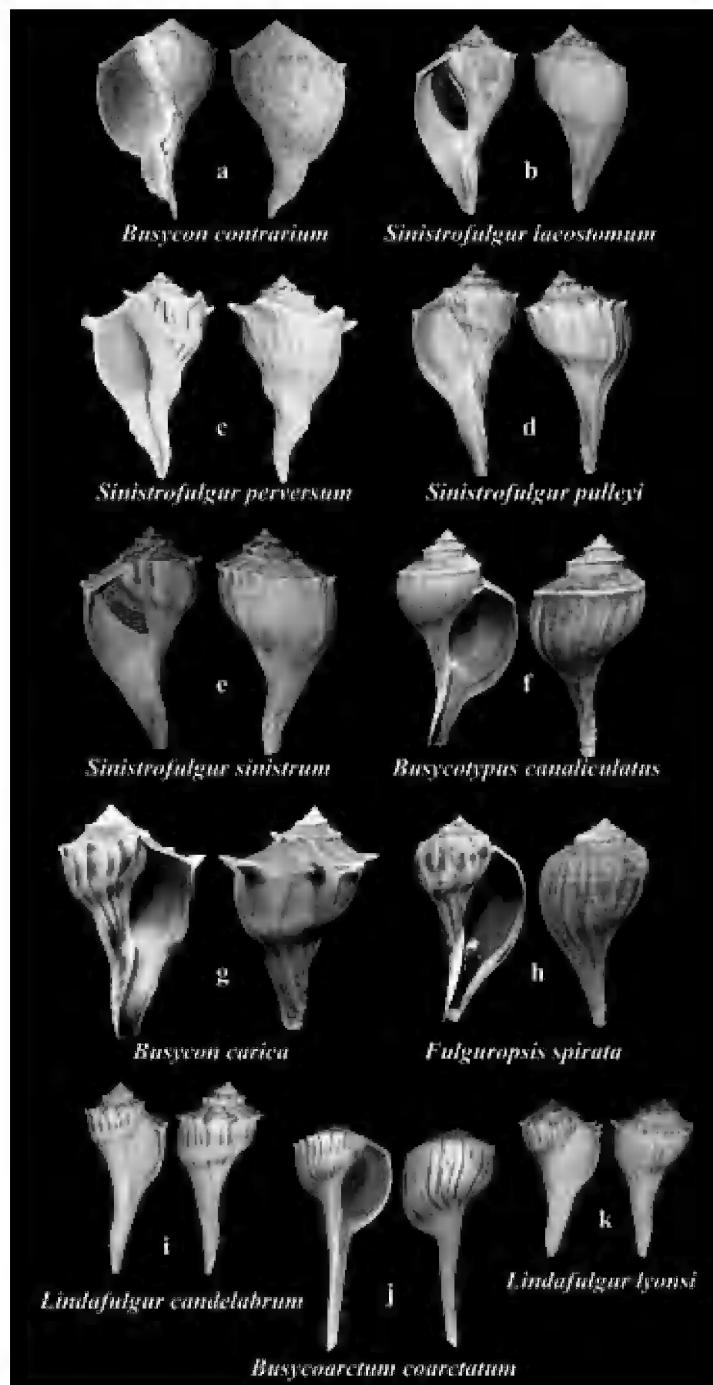
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### ‘Busycon’ whelks (names according to WoRMS)

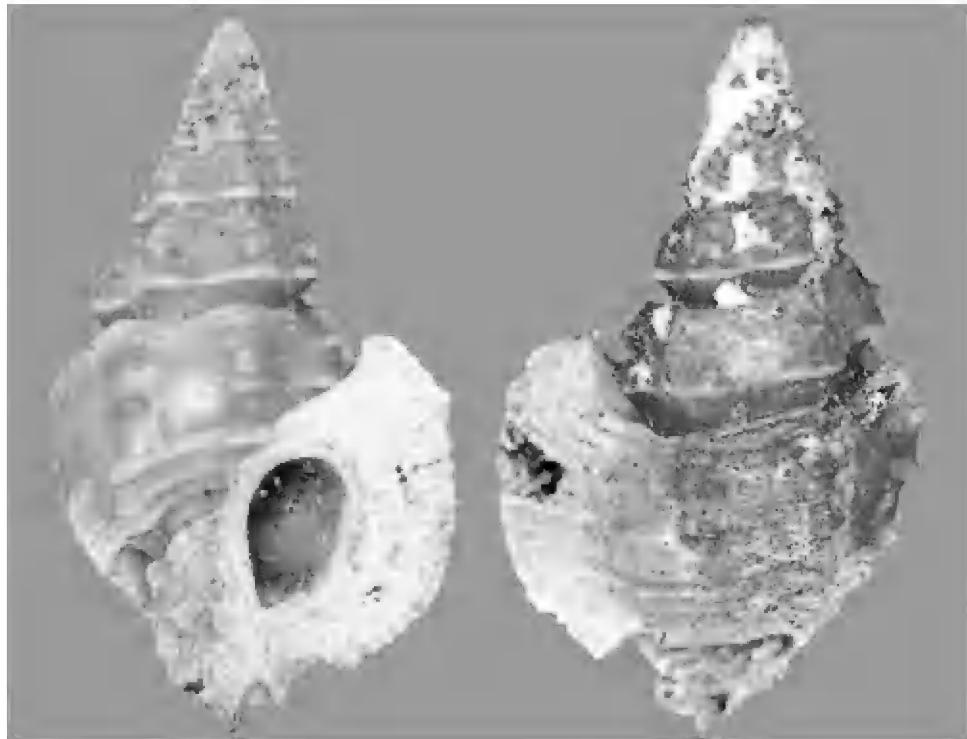
**a. *Busycon contrarium* (Conrad, 1840)** lightning whelk (Tertiary, Pliocene fossil) 240mm, La Belle, FL (image by H. Zell, Wikipedia Commons); **b. *Sinistrofulgur laeostomum* (Kent, 1982)**, lightning whelk, 206mm, Wildwood, New Jersey (image, [www.jaxshells.org](http://www.jaxshells.org)); **c. *Sinistrofulgur perversum* (Linnaeus, 1758)**, lightning whelk, 238mm, Yucatan, MX (image, [www.jaxshells.org](http://www.jaxshells.org)); **d. *Sinistrofulgur pulleyi* (Hollister, 1958)**, lightning whelk, unknown size, Texas (image, [www.jaxshells.org](http://www.jaxshells.org)); **e. *Sinistrofulgur sinistrum* (Hollister, 1958)**, lightning whelk, 200+mm, FL (image, [www.jaxshells.org](http://www.jaxshells.org)); **f. *Busycotypus canaliculatus* (Linnaeus, 1758)**, channeled whelk, 150mm, FL (image, [www.jaxshells.org](http://www.jaxshells.org)); **g. *Busycon carica* (Gmelin, 1791)**, knobbed whelk, unknown size, NC (image, [www.jaxshells.org](http://www.jaxshells.org)); **h. *Fulguropsis spirata* (Lamarck, 1816)**, pear or fig shell, unknown size, FL; **i. *Lindafulgur candelabrum* (Lamarck, 1816)**, splendid whelk, 125mm, Yucatan, MX (image, [www.jaxshells.org](http://www.jaxshells.org)); **j. *Busycoractum coarctatum* (G.B. Sowerby I, 1825)**, turnip whelk, 170mm, Yucatan, MX (image, [www.jaxshells.org](http://www.jaxshells.org)); **k. *Lindafulgur lyonsi* (Petuch, 1987)**, lyon’s whelk, 96mm, Tampa Bay, FL (image, [www.jaxshells.org](http://www.jaxshells.org)).

# “Ariel,” or Love at First Sight

E. Shary Almasi

In February of 1992, Trevor Roberts and I made our way, once again, to Panama, for another shelling adventure with James Ernest. After a restful night we were up at 7 AM, a breeze blowing as usual and another beautiful day; we headed for Gobernadora Island. We dredged all day off Gobernadora in 60-80 feet of water. We found *Murexiella lappa*, *M. laurae*, *Pterotyphis lowei*, *Typhis coronatus*, *T. grandis*, *T. clarki*, *Favartia incisa*, *Corbula amethystina*, and then I spotted a shell I had never seen before; neither had James. It was love at first sight. Later, when we got back to James' home, he and his right-hand man, Rafael, gave me the name after they looked it up in Myra Keen's *Sea Shells of Tropical West America* (1971). It was a specimen of *Neoterion ariel* (Pilsbry & H. N. Lowe, 1932), which seems to be a very rare species. It measures 11 mm. x 7 mm. Although Rafael does not read English, he has looked at Myra Keen's plates innumerable times and I believe he has almost memorized them. Both James and Rafael were very pleased with my 'find' and I got the impression that it was the first they'd seen.

After I got home I looked for *N. ariel* in Tom Rice's Prices and found nothing... and for 26 years I've just kept it in a drawer and admired it on a regular basis. In December, at our Pacific Northwest Shell Club meeting, we were asked to share our favorite shells. I took the *Neoterion* and shared. George Holm, editor of *The Dredgings*, our newsletter, did an article with pictures (The Dredgings: Volume 58 No.1). Will Ritter, a member from Astoria, Oregon, saw the article and was interested in my 'find' and contacted me, asking for location, etc. This led me to try to find out about it on the Internet, but not much was there, and the available image was the same old, drilled, dead specimen shown by Myra Keen. That led me, via Emilio Garcia, to an article by Emily Vokes, The Genus *Trajana* (Mollusca:Gastropoda) in the New World (1969). Vokes states in her article that "Those gastropods possessing a short, slightly recurved, closed siphonal canal, a circular aperture surrounded by a raised peristome, and a single terminal varix have presented a problem to writers for many years." Although when it was first described it was considered a subgenus of "*Hindsia*," Vokes (1969:76) thought it distinct enough to elevate *Neoterion* to a full, though monotypic, genus closely related to



*Neoterion ariel* (11mm) collected by the author in Panama in Feb. 1992. There have been a number of issues with the name of this species – see related article p. 14. Image is a composite from photographs by Greg Perrault.

*Trajana*, and continues, "The spiral ornamentation crossing the terminal varix is markedly similar in *Neoteroni* and *Trajana*." Cernohorsky (1981) placed *Neoterion* in the family Buccinidae; however, later workers place it in Nassariidae. (WoRMS, 2018)

My affair with *Ariel* continues undiminished. I've cherished this shell from the day that I found it and find it exciting that I'm learning about it after 26 years.

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# A bit more of the ‘name game’ with *Neoteron ariel*

Thomas E. Eichhorst

After reading Shari Almasi’s story (p. 13) of finding and identifying her rare shell – *Neoteron ariel* (Pilsbry & Lowe, 1932) – it seemed only natural to chase down the taxonomic trail of this species. It was originally described in Buccinidae, but eventually moved to Nassariidae. At first, second, or even third glance, it really doesn’t look like it fits into either family very well. I think many collectors would at first assume it is some form of a muricid, maybe *Favartia* or *Aspella*, as noted by Myra Keen (see the data slip in the second image), so you would be in really good company. The question is, how does a shell that looks like a muricid, is originally described as a buccinid, end up classified as a nassariid? Here is an abbreviated rendering of the road taken from the original name: *Hindsia ariel*, to the present name: *Neoteron ariel*. There are probably subtle steps and inferences I have missed, but I believe this is the core of the taxonomic actions concerning this species.

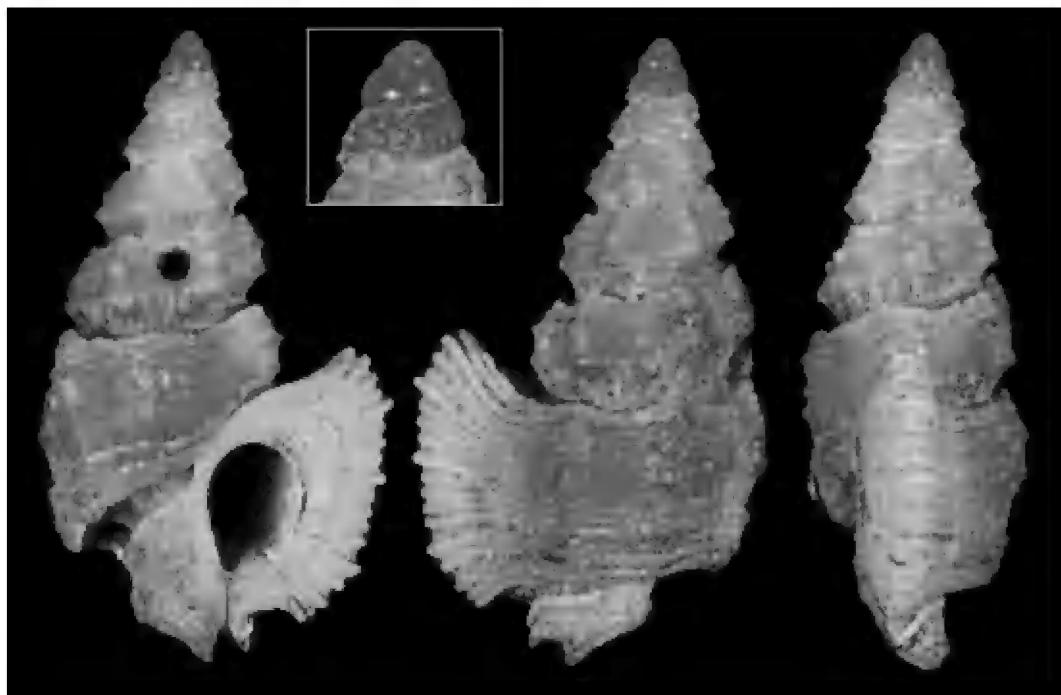
The sequence of events as best I can determine:

**1932 - Pilsbry & Lowe** name *Hindsia (Neoteron) ariel* as a buccinid.

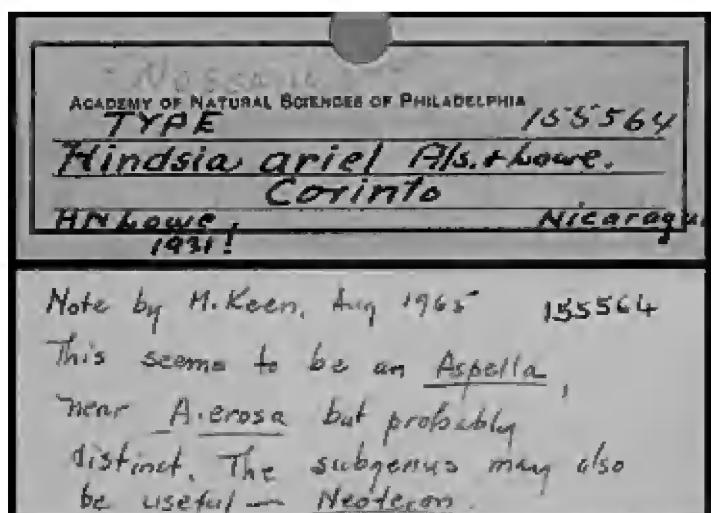
**1962 - Clench & Turner** list all 5,680 names created by Pilsbry, *Neoteron* is listed (p. 103) with no indication of whether it is a genus or subgenus, type listed as *Hindsia ariel*.

**1969 - Vokes** determines that *Hindsia* is inappropriate for a west coast species and elevates the Pilsbry & Lowe subgenus *Neoteron* to a full genus, admitting it is monotypic and related to *Trajana* (a nassariid), but different enough to deserve its own genus. This is the first hint that it may be a nassariid.

**1971 - Keen** agrees with Vokes on the new genus, but leaves the species a buccinid.



The holotype of *Neoteron ariel* (Pilsbry & Lowe, 1932) at the Academy of Natural Sciences of Drexel University (ANSU). This specimen is over 21mm and was collected in Nicaragua by H.N. Lowe in 1931. This image is a composite of the ANSU images on <http://clade.anp.org/malacology/collections/>



This is the data slip for the holotype of *Neoteron ariel*, catalogued under the original name of *Hindsia ariel*, no. 155564. The accompanying comments by Myra Keen in 1965 note that the specimen appears similar to *Aspella*, "...but probably distinct." She also points out that the subgenus *Neoteron*, "...may also be useful..." an indication of the specimen's poor fit in *Hindsia*.

**1971 - Radwin** reports, “Traditionally, West Coast workers have referred two species with new world affinities to *Hindsia*, an Indo-Pacific genus. Dell (1967) arrived at the conclusion that *Hindsia* can only be used for its type species, *Neptunea pusilla*. All other Indo-Pacific “*Hindsia*” he places in *Benthindsia* Iredale, 1936. As explained by Vokes (1969), ‘*Hindsia*’ *perideris* and ‘*H.*’ *acapulcana* should be placed in *Trajana* Gardner, 1948. Based on a fossil species, this genus is nassariid and is apparently limited to the new world.” (p. 30)

**1975 - Keen & Coan** update Keen’s “Sea Shells of Tropical America” and move *Neoteron ariel* from the buccinid part of the book to the nassariid part, based upon “fide Radwin (in Litt.).” [p. 33]

**1981 - Cernohorsky** in his monograph on Pacific buccinids treats *Neoteron* as a monotypic buccinid genus.

**1981 - D'Attilio** reports in *The Festivus* and illustrates for the first time the radula of *Neoteron ariel* and continues with the nassariid affinity.

**1992 - Skoglund** extends the range and reports Cernohorsky moved it back to Buccinidae in 1981. Actually, Cernohorsky just reported it as a buccinid and ignored or was unaware of the buccinid vs. nassariid issue.

**2010 - Landau & Marques da Silva** name *Neoteron emilyvokesae* as a fossil member of what was a monotypic genus.

**2016 - Galindo, et al.** in “The Phylogeny and systematics of the Nassariidae revisted,” confirm *Neoteron* as a nassariid.

**2018 - WoRMS** lists *Neoteron* as a nassariid.

From WoRMS:

Kingdom: **Animalia**

Phylum: **Mollusca**

Class: **Gastropoda**

Subclass: **Caenogastropoda**

Order: **Neogastropoda**

Superfamily: **Buccinoidea**

Family: **Nassariidae**

Subfamily: **Photinae**

Genus: ***Neoteron***

Species: ***Neoteron ariel* (Pilsbry & Lowe, 1932)**

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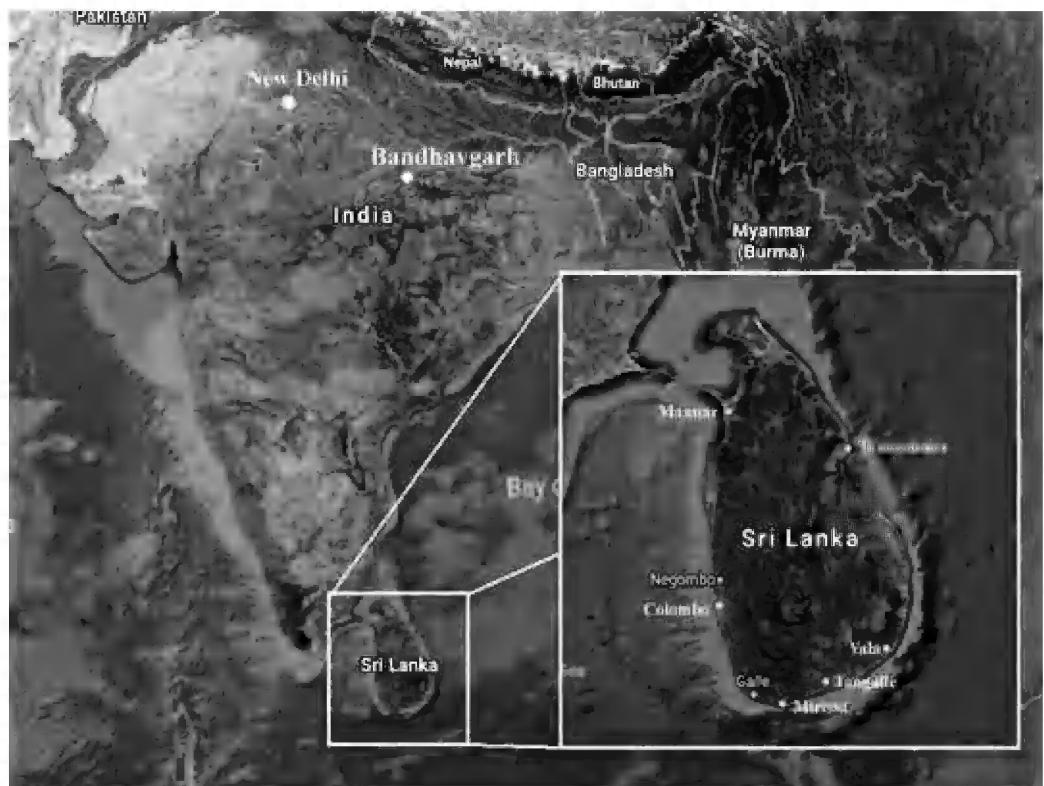
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# India and Sri Lanka: tigers, leopards, whales, and snails

Charles E. Rawlings

I am looking at a bucket full of living *Harpulina arausiaca* (Lightfoot, 1786); well actually, the bucket isn't totally full, but does contain at least three of them, all living and crawling around. The animal, unlike most volutes, looks nothing like the shell; but then how could it. The shell itself is typically volute in shape, but is characterized by brilliant orange stripes, which can be a deep golden ranging to a brilliant red orange color – thus the common name golden lined volute. These particular ones had brilliant red orange stripes. So these living shells needed to be photographed and photographed soon. That really did not seem to be a problem since they were still alive four days after they were collected, but I digress, let's start at the beginning of my Sri Lanka shell saga and my attempts to photograph these shells alive – what could easily be the first photographs living *Harpulina arausiaca*.

I arrived in Trincomalee in August 2017; ready, willing, and equipped to photograph living Sri Lankan shells. After a day or so, I was introduced to a group of shell divers. Well, they dove for shells as well as spear fishing, whatever would pay the bills and was needed on that particular day. As an aside, they were Muslim, but they invited me to their mosque for the 5 PM service. They explained that in Sri Lanka, Allah really didn't care if you were Muslim, Buddhist, or Christian – all were welcome in the mosque. What a unique concept to most Americans. After mosque, I returned to their houses and explained what I was trying to do, photograph living mollusks. I showed them several photos and explained that I was extremely interested in *Harpulina arausiaca*. I was met with enthusiasm; oh yes, they knew *arausiaca*; they found them frequently; they brought out multiple shells, a few of which I purchased, but, and this was the huge but, they hadn't seen one since April/May of that year. They had a season, so if I returned during their



season they could almost guarantee a photograph. Well just great! In the meantime, come diving with us and we will find plenty of shells. I did and we did – beautiful *Chicoreus palmarosae*. I vowed to return for photos in the spring. I also showed them *Harpulina lapponica*; sure, that was an easy shell, on the opposite coast. Well, that was an interesting prospect.

If I was going back to Sri Lanka in March 2018, then I decided I must stop in India to photograph tigers (a bucket list item) plus try photographing blue whales off Mirissa (another bucket list item), all of which just happened to be in season. As a result, I found myself sitting in Philadelphia after having been blown off the runway in a landing attempt at JFK. I was stranded and my flight to India was scheduled to leave that evening from JFK at midnight. Well, me on that flight was obviously not going to happen. Long story short, I re-arranged my itinerary, spent two nights in Manhattan, then left for India 48 hours later. Luckily, the tigers waited for me.

Landing in Delhi is like being in Los Angeles on steroids. I arrived around 5 AM and the traffic was still horrendous. All around was cacophony and the worst pollution



(Left): The Sri Lankan National Park of Yala, contains environments varying from ocean beaches to jungle and from scrub lands to arid desert. After three days of searching and not until dusk of my final day there, was I able to finally capture this image of the elusive leopard, *Panthera pardus*.

(Below): The people who live in and around the Indian National Park of Bandhavgarh are protective of their population of Bengal tigers, *Panthera tigris tigris*. This is the most numerous of the tiger subspecies, but all are listed as endangered by the International Union for Conservation of Nature (IUCN: [www.iucn.org](http://www.iucn.org)).



in the world or at least in my experience. Thankfully my plane to Jabalpur was on time, and I was off to Bandhavgarh National Park with only a short stay in Delhi. Bandhavgarh has the largest concentration of Bengal tigers in India, and they are still extremely elusive. Luckily my sightings were incredible, including one making a kill and then another female coming within three feet of my jeep. As an aside, everyone associated with Bandhavgarh, including the adjacent villages, are extremely protective of "their" tigers. Their livelihood depends upon the tourist trade, and anti-poaching brigades are always evident.

After Bandhavgarh, I flew from Delhi to Colombo, Sri Lanka, and then to Negombo. I met my friend and fellow shell collector, Lynn Murphy, for what we thought would be a shelling adventure. The following day we traveled up to the Kalpitiya Peninsula, searching for living shells. Those we found but not the ones I was searching for – *Harpulina arausiaca* and *Harpulina lapponica*. *H. lapponica* was theoretically from this region, but now we were told they were even further north, closer to Mannar. Great, Lynn collected a bucketful of awesome Sri Lankan species, including several species of textile cones, tiger and map cowries, as



**Not easy to photograph, the blue whale, *Balaenoptera musculus*, as the largest living animal on the planet, is certainly an impressive and unforgettable sight. Hunted almost to extinction, they were afforded protection only in 1966 and have since rebounded in population to an estimated 10,000 to 25,000 individuals according to the IUCN Red List (<http://www.iucnredlist.org/details/2477/0>).**

well as *Chicoreus palmarosae* (Lamarck, 1822). I left word that I was interested in *lapponica* if they could find them. Since Lynn had been in the country several days and needed to leave within 48 hours, we traveled back to Negombo. I then headed to Yala, to photograph leopards before my blue whale adventure.

Yala is a uniquely situated Sri Lankan National Park that has beaches within its confines and includes jungle, scrub, and arid regions, which make it a unique ecosystem. More importantly, within its confines is one of the highest densities of leopards in the world. For almost three days I would leave my cabin at 5 AM, climb into a jeep and ride the rough trails of Yala looking for leopards. I was able to photograph an incredible array of wild life, but not until dusk of the last day did we spot a leopard posing for a photograph. I was ecstatic for I was to leave for Mirissa and the blue whales the next day.

On the way to Mirissa, you pass through such classic fishing and sailing ports as Galle and Tangalle. All of these towns have a history rich in fishing and recently whale watching. Mirissa is probably most famous for its blue whales, the largest creature to ever live on earth, due to the fact that Mirissa has a unique continental shelf topography. The shelf itself, which averages between 80 and 180 feet in depth, extends only about six miles from the coastline. At

that point the seafloor plunges along a cliff face to approximately 12,000 feet in depth. Moreover, a deep undersea canyon cuts into this cliff face and points almost directly at the Mirissa port. In other words, you only need to travel for four to six miles out of Mirissa and you are located along the plunging face of a deep sea canyon.

Along this face is where the blue whales congregate from December to March. They deep dive along the cliffs feeding upon schools of squid and fish. The population is a bit transient, but on a good day you can usually spot eight to ten individuals within a ten square mile area. You spot them by their blows or expelled breaths on the surface. Once you see a blow, you have approximately 60 seconds to position the boat and roll into the water with your adrenalin under control and poised for a photograph. Blue whales have a mind of their own. They are never curious about humans like humpback whales, who can spend hours around one human. The blues are solitary, care little about your presence, and are very uncooperative photo subjects. These photos were a result of multiple attempts over three full days in the water with the whales. My captain had never seen the eye of a blue whale in a photograph prior to this one.

I arrived in Bentota exhausted by my blue whale adventure. Word arrived that fishermen (and by that I mean Sri Lankan shell collectors) had living *H. arausiaca* in a bucket



The end result of a lot of miles traveled and a fasinating exposure to the wildlife of India and Sri Lanka. *Harpulina arausiaca* certainly deserves its popularity with collectors.



Showing a sharp contrast between the shell color and pattern and that of the body, these may be the first images of living *Harpulina arausiaca*.



Although an accessible and common species, *Harpulina lapponica* shows off a fasinating pattern contrast between shell and animal.



The green bee-eater, *Merops orientalis*, is an abundant species that ranges from Africa, through India, to Asia. They catch their prey on the wing, removing the stingers of bees and wasps prior to eating them.



*Harpulina arausiaca* in a bucket, the end of 'interesting' trips with blue whales, tigers, sea shells, and snow! Quite an experience, all tied to a moderately-sized, orange-striped volute.



A female black-necked stork, *Ephippiorhynchus asiaticus*. Although widespread throughout India, Asia, New Guinea, and Australia (different subspecies), the population of Sri Lanka is limited to about 50 individuals.

for me. We have now come full circle in our narrative. The *H. arausiaca* were indeed still alive after their trip from Trincomalee, as you can see in the photograph. The living shell's color is incredibly vibrant, but wait, that's not all. A group of *Harpulina lapponica* also made it back alive from Mannar on the west coast. These had been wrapped in wet cloth and paper, but were still alive. Luckily, the animal was not completely traumatized; in fact, the animal graciously emerged from its shell for its photographic session.

So there you have it, tigers, leopards, whales, and snails. From a Nor'easter blizzard in New York, to begin my trip, to living *H. arausiaca* in a bucket, the trip was definitely different than most of my prior expeditions. I could only smile as I reviewed my photographs and just shake my head over the efforts of myself and my guides. The efforts that lead to a snarling tiger, the eye of a Blue Whale, and living *H. arausiaca* and *lapponica*. Who knows that will come next?

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# Subspecies in Cypraeidae: the case for the prosecution

Moshe Erlendur Okon

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[www.linnean.org/thelinnean](http://www.linnean.org/thelinnean)

It was Carl Linnaeus who in 1758 formally devised the binomial nomenclatural system we use today for naming species in the 10<sup>th</sup> edition of his *Systema Naturae* (Fig. 1). According to this system, each species is awarded a binomen consisting of the genus (capitalized) and the species (lowercase), and nowadays often followed by the name of the author of the species and the year it was authored: e.g. *Homo sapiens* Linnaeus, 1758. The same name cannot be given to more than one species, but each genus can contain several species, e.g. *Homo erectus* (Dubois, 1892). The parentheses indicate that Dubois originally used a different genus name (*Pithecanthropus*). Incidentally, the first taxonomist was also the first man, “And Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field.” (*Bible*, 2, 20)

When Linnaeus introduced the binomial method, used *inter alia* for naming mollusks, and thus described species (many already known then, but not named in accordance with his brilliant new scheme), he did not designate a ‘holotype’ as such (a single type specimen upon which the description and name of a new species are based). Apart from the short verbal description (Fig 2), Linnaeus also referred to earlier works in which those shells were illustrated. It is clear that these old black and white illustrations are not always a very useful tool in determining exactly which shells Linnaeus had in mind (Fig. 3).

**Fig. 3:** This is one of the illustrations referenced by Linnaeus for his *Cypraea tigris*. In this case, the 1702 work by James Petiver, listed by Linnaeus as: “Pet. gaz. t. 96, f. 7.”

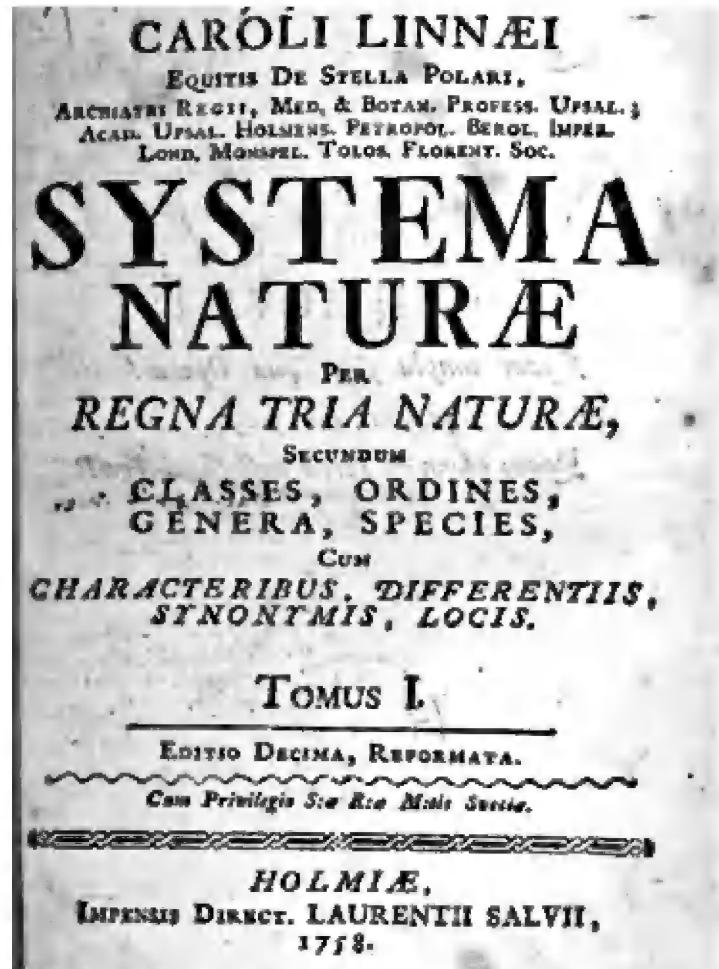
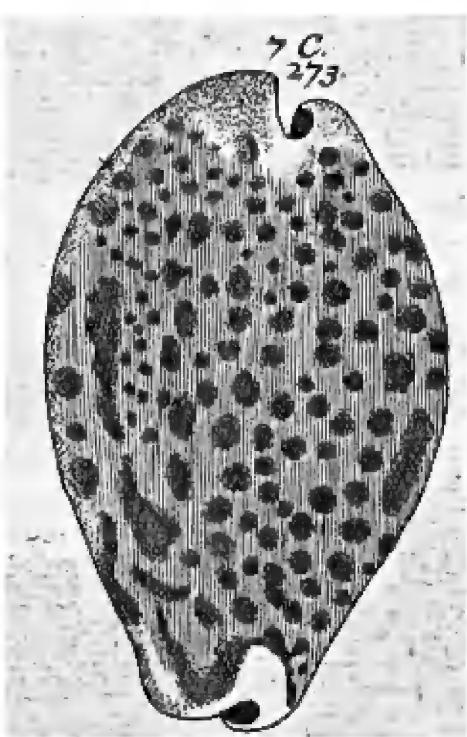


Fig. 1: The 10<sup>th</sup> edition of the *Systema Naturae* by Carl Linnaeus established the binomial system of scientific nomenclature used today.

Tigris. 302. C. testa obtusa ovata, pollice obtusa, antice rotundata.  
*Bonnn. recr.* 3. f. 264. 231. 232.  
*Kempf. maf.* t. 38. f. A. *Porcellana guttata.*  
*Goult. test.* t. 14. f. I. *H. L.*  
*Lift. tuncb.* 4. f. 2. t. 4. t. 1.  
*Pet. gaz.* t. 96. f. 7.  
*Barr. var.* t. 132. f. 23. & t. 1326. f. 4.  
*Habitat in Madagascar,*  
*Variat colore: albida & purpurascens.*

Fig. 2 (above): The original description of *Cypraea tigris* Linnaeus, 1758. Linnaeus did not have illustrations in his *Systema Naturae*, but rather referenced illustrations in earlier publications.

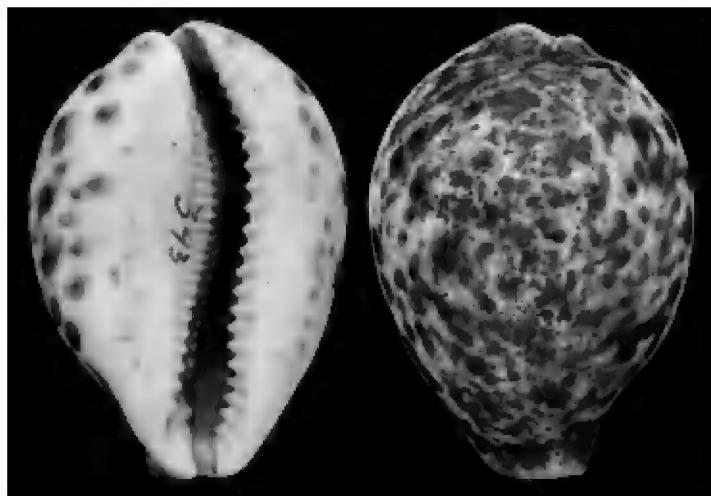


Fig. 4: One of two *Cypraea tigris* (P-Z 0010831) from the Linnean collection in London, about 65 mm. Courtesy of The Linnean Society in London (<http://linnean-online.org/>).



Fig. 5: Toothless *Cypraeovula edentula* (Gray, 1825), 22mm.

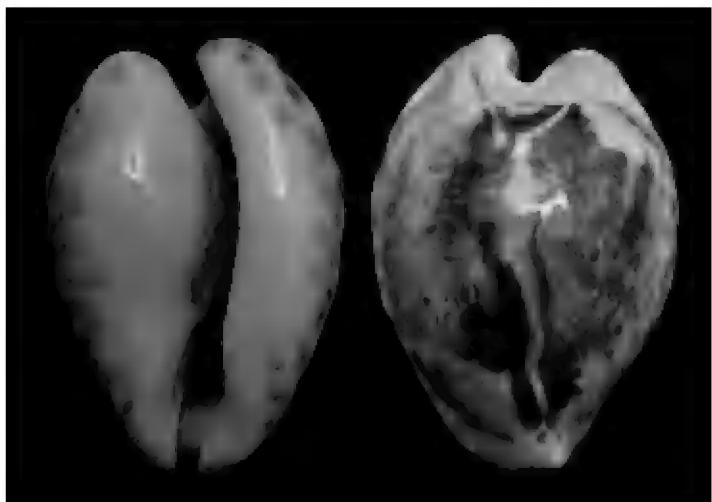


Fig. 5: Toothless *Afrozoila teulerei* (Cazenavette, 1845), 50mm.

Linnaeus, however, also had shells for reference: either in his own collection or in the collection of the Queen of Sweden. Part of his collection was sold by his widow and is kept today by the Linnean Society in London. It can be viewed on the Society web site (<http://linnean-online.org/>) (Fig 4). The collection underwent handling and curating over the years – by notables such as S. Peter Dance, one of the most prominent conchologists of our time. Other shells examined by Linnaeus are now in the Uppsala University, Museum of Evolution, Zoology Section.

In zoology, one of the several definitions for ‘species’ is: “...groups of actually or potentially interbreeding natural populations, which are reproductively isolated from other such groups” (Mayr, 1942). While it is possible that animals belonging to one species do copulate with those of another, their offspring will most likely be sterile. For conchologists, however, this is not a very practical tool, since it is usually impossible to test whether one group of mollusks does indeed interbreed with another and whether or not their offspring are fertile.

And so, several different, more workable, definitions have been proposed – some focus on shell morphology only, while others combine additional features such as DNA sequencing, radula studies, reproductive organ examination, etc. For most conchologists, amateurs and professionals alike, there is usually only an empty shell to contemplate. Even if the animal was properly preserved – dissecting it, mounting the radula, or performing DNA tests, are not always feasible options (or totally impossible if the specimen belongs to an extinct species, i.e. fossilized). This is why the morphological definitions come in handy, despite their limitations.

One such definition of species states that: a group of cowries will belong to the same species, if they all share at least one characteristic, which (sometimes together with other characteristics) distinguishes them from any other group. This is sometimes referred to as the Main Diagnostic Shell Character (MDSC). Thus, a toothed aperture will not be sufficient to define a group of cowries as one species (since almost all cowries have teeth), nor will the absence of teeth, since both *Cypraeovula edentula* (Gray, 1825) (Fig. 5) and *Afrozoila teulerei* (Cazenavette, 1846) (Fig. 6) lack them. On the other hand, the basal pattern of *Perisserosa guttata* (Gmelin, 1791) (Fig. 7) or the uniform orange dorsum of *Callistocypraea aurantium* (Gmelin, 1791) (Fig. 8), for instance, are in themselves sufficient MDSCs to allocate cowries possessing them to those species. Absence of teeth, together with the dorsal pattern, shape and size, can serve as combined MDSCs to distinguish *C. edentula* from *A. teulerei*.

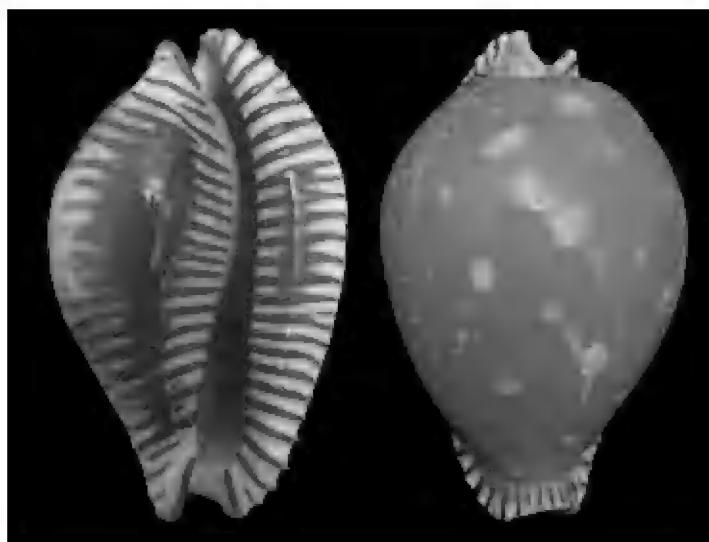


Fig. 7: *Perisserosa guttata* (Gmelin, 1791), 62mm.

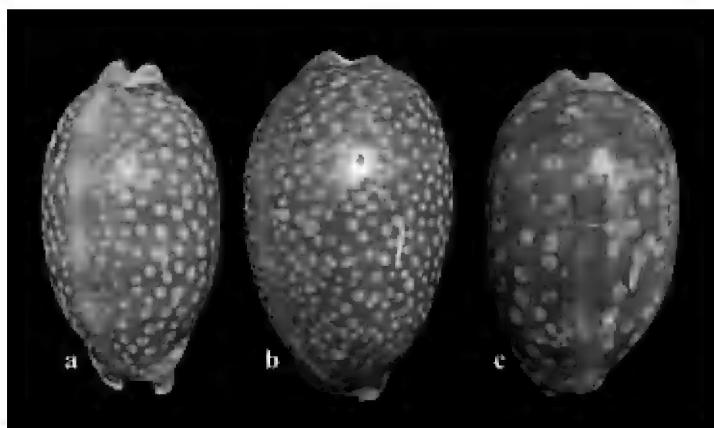


Fig. 9: a. *Macrocypraea cervinetta* (Kiener, 1843), 77mm; b. *Macrocypraea cervus* (Linnaeus, 1771), 82mm; c. *Macrocypraea zebra* (Linnaeus, 1758), 80mm.

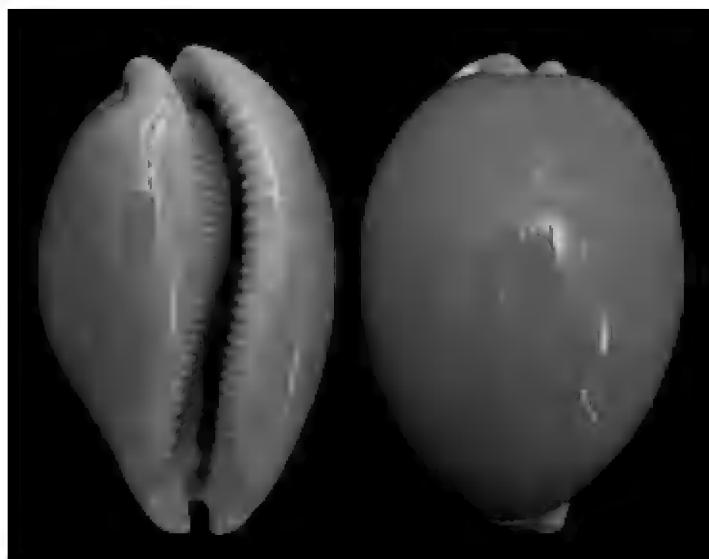


Fig. 8: *Lyncina aurantium* (Gmelin, 1791), 92mm.

Taxonomy and nomenclature do not stop at the species level. Whereas 'species' is both a natural and taxonomic concept, 'subspecies' is not, and has little biological meaning, although recognized by Article 45 of the ICBN (International Code of Zoological Nomenclature) as a valid rank (the lowest). Its use became common during the mid 19<sup>th</sup> century. The common definition used for subspecies states that cowries within a species will constitute a subspecies, if the population they belong to is geographically (or otherwise) separated from other populations of that species, and if the majority of the individuals of that group differ in some manner from the individuals of the other populations of that species.

Some believe that subspecies may be on the verge of becoming a new species at some future point in time, when the isolation and evolution change them to such an extent that they can no longer be associated with the parent species.

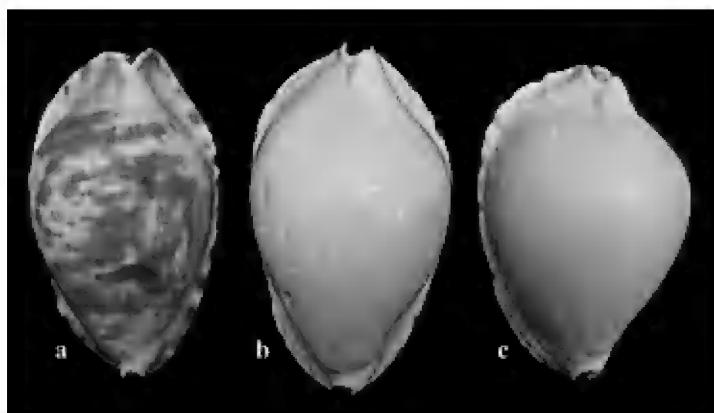
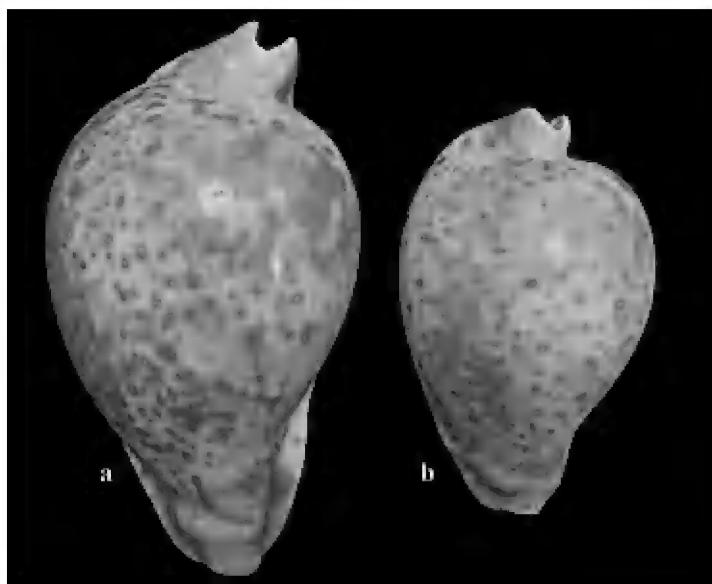


Fig. 10: a. typical *Zoila marginata* (Gaskoin, 1849), 55mm, from Carnac Island, West Australia; b. pale *Z. marginata* from Perth, Western Australia, which cannot be called *albanyensis*, even though this subspecies was named for its pale shells; c. pale *Z. marginata* 'albanyensis' from Albany, West Australia.

This may have happened with the ancestors of *Macrocypraea cervinetta* (Kiener, 1844), in the East Pacific and *Macrocypraea cervus* (Linnaeus, 1771) and *Macrocypraea zebra* (Linnaeus, 1758), in the West Atlantic, after the Panamanian isthmus closed (Fig. 9). Many species did, of course, evolve in this manner, but we have no way of knowing which subspecies will and which will not. Some authors do not recognize subspecies in their works at all.

So what information does the subspecific rank afford us besides locale? While there are several populations of the recognized Western Australian species *Zoila marginata* (Gaskoin, 1849), many of those found in the Albany area have a pale, colorless dorsum, and were awarded the subspecific rank of *Zoila marginata albanyensis* L. Raybaudi, 1985, although some synonymize it with *Z. marginata marginata*. While the information implied by the subspecific



**Fig. 11: a. *Umbilia hesitata* Jousseaume, 1884, 95mm; b. *Umbilia hesitata* 'beddomei,' 65mm.**

rank is indeed important (i.e. that the Albany area *Z. marginata* population is typically colorless), a pale shell from Perth cannot be called *Z. marginata albanyensis* (Fig. 10) but a dark shell from Albany can!

The fact that there are pale *Z. marginata* could have also been relayed in a different manner, e.g., by describing a form, which has no taxonomic standing, but which could have a more descriptive name, such as 'albata' and would apply to all pale *Z. marginata*, regardless of origin. One can also publish a variability study of *Z. marginata*.

Another point to take into consideration is that subspecies nomenclature is quite haphazard, depending on the type locality of the nominate species. For instance, Gmelin named *Cypraea* (now *Naria*) *acicularis* Gmelin, 1791, from the western Atlantic coast. Later on, Schilder named a subspecies from St. Helena Island: *C. acicularis sanctaehelenae* Schilder, 1930, making *C. acicularis acicularis* the nominate subspecies, but if Gmelin had used a shell from that same island to describe his new species (instead of a coastal one), that island population would be named *C. acicularis acicularis*, and the western Atlantic coast population would perhaps be called *C. acicularis 'braziliensis.'*

Size has also been used as a parameter for naming a subspecies. *Cypraea tigris schilderiana* Cate, 1961, comes to mind (large tiger cowries from Hawaii). Another example is *Umbilia hesitata beddomei* (Schilder, 1930), viewed by some as a synonym of *U. hesitata* (perhaps a smaller female morph) (Fig. 11). Then there is *Mauritia arabica immanis* F. A. Schilder & M. Schilder, 1939, a subspecies name for the western Pacific population of *Mauritia arabica* (Linnaeus, 1758). The name implies huge size, which produces funny (if not meaningless) statements, such as: "There is also a dwarf variety in southwest Africa and Mauritius." How big (or small) is a dwarf giant?

Cowries are perhaps the most popular group of shells collected. They are beautiful, pleasant to handle, and some,

either very rare or hard to obtain, also command high prices on the shell market. Well over fifteen hundred names have been given over the years and about 250 species are currently recognized. Subspecies in Cypraeidae are numerous, indeed the plethora of new names attributed to geographical populations is unprecedented in any other molluscan family. Many collectors will surely pay more for a 'new species or subspecies' than for a mere 'form,' and naming a 'new species or subspecies' sets one's name down for posterity. Yet, as I have tried to demonstrate here, there are better (albeit less glamorous) ways of handling infraspecific variability.

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(Fig. 5-11 collection & photo M.E. Okon)

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# Subspecies in the Cypraeidae: witness for the defense

J. C. WEIR

This letter was first published in *The Linnean* (Vol. 34, No. 1, April 2018) and is republished here with the permission of The Linnean Society of London.

It was with great interest that I read Mr Okon's (2017) recent article on the naming of sub-species in the Cypraeidae. It is a group with which I am regrettably unfamiliar and, typically, I would therefore hesitate in venturing any refutation of what he has said. However, it seems to me that, although firmly grounded in this specific group of mollusks, his remarks are in fact illustrative of broader and more far reaching taxonomic problems, related to the description and categorisation of within-species phenotypic variation. Indeed, many of the points he made are applicable, at least in principle, to my own group, the Lepidoptera, and there are one or two that I feel I must offer an alternative perspective on.

My principal objection lies with his argument that “[w]hereas species is both a natural and taxonomic concept, subspecies is not, and has little biological meaning”. I think that this could not be further from the truth. Species are indeed “natural” in that our classifying them as discrete entities reflects true isolation in a state of nature—under Mayr’s definition of a population of freely interbreeding organisms, reproductively isolated from other such populations, a species might be thought of simply as an isolated pool of genes, cut off from mixing with other such pools; the unique genetic composition of the pools, resultant from this isolation, gives each species their distinctive phenotypic characteristics. These, in turn, form the basis of any morphological means of species determination.

I would argue that, in a similar manner, the term “sub-species” is an attempt to taxonomically acknowledge geographical variation, resulting from local adaptation and random genetic drift, and provide a context in which it can be described and classified. We can imagine populations or groups of populations as being present at different points on an axis of speciation, from total genetic interchange and homogeneity (a single species) to complete genetic isolation and divergent gene pools (new daughter species). In this sense, then, the category “sub-species” is surely as biologically valid as “species” in that it too reflects a natural distinction; an isolated, phenotypically distinct population, albeit to a lesser degree and more modestly advanced along the road to speciation than full species.

I can, however, sympathise with the criticism that many populations or within-species variants are entirely inappropriately described as “sub-species”. In the Lepidoptera, for instance, the geographically distinct populations of *Coenonympha tullia* which occur in Britain, named *scotica*, *polydama*, and *davus*, have been called sub-species, despite it being not at all uncommon for individuals resembling one “sub-species” to occur in the distribution



*Coenonympha tullia* (Müller, 1764), known as the large heath or common ringlet, has three named “subspecies,” which do not fit within the accepted definition of a sub-species. Image from Wikipedia Commons.

of another. Indeed, localities are known where individuals belonging to all three “sub-species” fly together (Ford, 1953). It seems to me that local adaptation is certainly at work – there is a discernible general pattern of geographical phenotypic variation (Dennis, 1992) – but to name these groups sub-species, and at least implicitly suggest that they are in some way incipient full species, is I think very difficult to justify. This is a far softer form of divergence, with much continued gene flow, closer to the single species end of the axis I outlined above.

This approaches the heart of the issue as I see it—not a problem with sub-species as a concept, but rather a lack of any other recognised taxonomic categories for describing different types of within-species variants. I have proposed the resurrection of the term “race”, once used commonly by entomologists, for weakly divergent populations of the kind illustrated by *C. tullia* (Weir, 2016). Similarly, Mr Okon eloquently illustrates the absurdity of calling what is plainly a polymorphic variety of *Zoila marginata*, of limited geographical distribution, a sub-species.

I am not, however, of the opinion that it is a waste of time to formally name within-species taxa. Rather, for those interested in intraspecific variation, such names are



***Lysandra coridon* (Howarth, 1973), the chalk hill blue, has 446 named forms. Image from Wikipedia Commons.**

often as necessary as those of species, and for entirely the same reasons: to prevent repeated, lengthy and potentially confusing written descriptions. I believe that with a broader range of categories, that could be specified with prefixes to the formal names, so much more biological information could be conveyed: distinction could be made at a glance between weakly or strongly divergent geographical populations; polymorphic varieties; seasonal forms; rare mutants; and, so on. I have argued this case at some length previously (Weir, 2016).

To conclude, sub-species is not only a meaningful category, it is essential if we wish to taxonomically describe biological reality. In fact, I regard the pre-eminent problem with naming intraspecific variants as being a lack of formal, taxonomic recognition for the different types of within-species variation evident in nature. Finally, I would emphasise that I do not make this recommendation for more complex naming lightly – lepidopterists have, more than most, been seduced by the allure of inventing new names and I suggest that the 446 named aberrations of the British lycaenid *Lysandra coridon* (Howarth, 1973), make 1500 names among 250 cypraeid species somewhat lose its sting.

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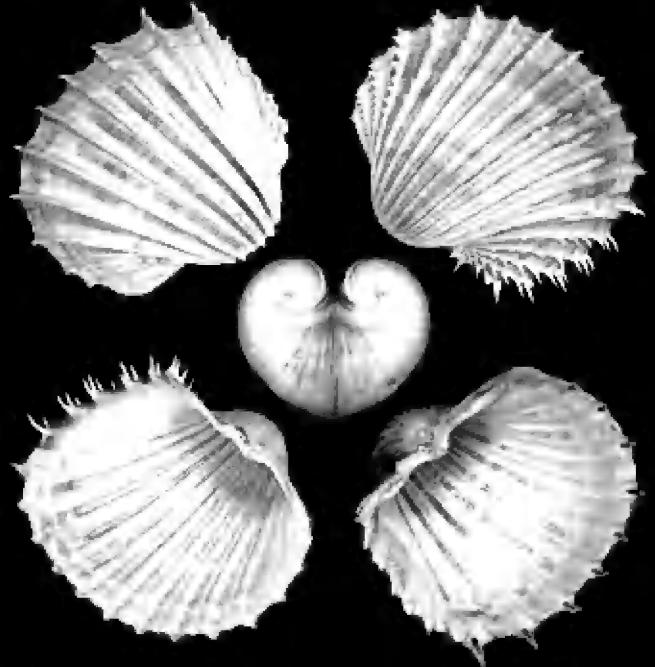
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# Conchologists of America

## Annual Business Meeting



**Tortuga Ballroom, Grand Key Resort Doubletree by Hilton  
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The annual business meeting was called to order in the Tortuga Ballroom at 3:18 PM by President Harry G. Lee, who welcomed all in attendance. He introduced himself and the other 12 attending board members and committee chairmen, as follows:

Harry G. Lee, President; Wayne Humbird, Vice President (*in absentia*); Steven Coker, Treasurer; Phyllis Gray, Secretary; Everett Long, Trustee; Karlynn Morgan, Membership Chair; Donald Dan, COA Awards and Endowments; Marcus Coltro, Website Coordinator; Tom Eichhorst, editor; Dr. José Leal, Immediate Past President; and Members at Large, Dr. Doug Wolfe, Jim Brunner, and Ed Schuller.

Minutes of the previous Annual Business Meeting at the 2016 COA Convention in Rosemont, Illinois, were in the convention packet of all registrants. Alan Gettleman moved, and Ron Bopp seconded, a motion to accept the minutes as distributed. Motion carried.

Steven Coker, Treasurer, presented the 2016 Financial Report and the 2017 Budget. He noted in 2016 receipts of \$92,731.60 which included the delayed arrival of 2015 convention proceeds; disbursements of \$45,218.44 with a year-end balance of \$255,139.40, which was a net increase of \$48,000.00. He mentioned that the increase in total assets of COA will require COA to use the more complicated IRS Form 990 in the future. He also reported the 2017 oral auction total exceeded \$81,000 (prior record was \$25,000) and an estimated silent auction total of \$13,000 revenue which will add \$65,000 to the Grant Endowment. He announced the board adopted the 2017 operating budget.

Tom Eichhorst moved, and Jim Brunner seconded a motion to accept the Financial Reports. Motion carried.

The 2017 Academic Grant Committee report was sent by its chair, Dr. Jann Vandetti. In her absence, Dr Leal made a PowerPoint presentation noting the 12 recipients, their institutions, project titles, and awards, which totaled \$25,652.41. A copy of this tabulation was included in the convention packet of all registrants. Among the 12 were five eponymous awards, including the inaugural Frederic Weiss Award. Dr. Leal thanked attendees for their support of the awards program and buying at the oral auction thus making the future of professional conchology more secure.

*American Conchologist* Editor, Tom Eichhorst, reported an extra issue, Supplement 1, had been issued this year. The next issue (September) will feature an article by Dr. Emily Vokes, to be followed by an article by Colin Redfern. He thanked all for their support, noting circulation is approaching 900, around the world.



**COA President – Harry G. Lee**

Anne Joffe has been appointed Property Manager to handle hardware and publications.

Donald Dan, Endowment Chair, reported that the COA Award had been presented at ten domestic and four overseas shell shows in 2016. As an ancillary function, he coordinated printing of the COA Grant Donations brochure, listing ten recipients. He acknowledged John Timmerman for the design and composition of the Convention Oral Auction catalogue. Donald also assisted in printing the trifold brochure for the 2018 Convention. He also released dates of shell shows and events twice last year as has been his custom. He thanked Everett Long for orchestrating the successful 2017 Oral Auction the previous evening.

Proceedings were interrupted in order for President Lee to recognize Donald Dan for his efforts on behalf of COA pertaining to preparing the Weiss Collection, and Larry Strange for his 55 page appraisal to the Weiss family. Donald commented he wished to again acknowledge appreciation to John Timmerman for designing the Oral Auction Catalogue as well as to Ed Schuller for the online distribution of the catalogue, and for the efforts of Cheryl and John Jacobs in preparing and running the Silent Auctions.

The Audit Committee report, prepared by Dave Green and Wayne Humbird, was received by President Lee, and it stated the COA financial books to be accurate.

Anne Joffe, Convention Coordinator, thanked Chicago for last year's convention. The 2017 challenge was no active shell club, so she went to North Carolina and Florida people to produce the team, which will also continue to assist as needed for the 2018 San Diego effort. In 2019 she will chair the convention to be held at South Seas Plantation in Captiva, Florida. Dates will be in June, to avoid the hurricane season. Resort includes a 35,000 s.f. ballroom and a room rate of \$179 nightly. This is timed as the 100<sup>th</sup> anniversary of the birthday of Dr. R. Tucker Abbott. After speaking to five clubs outside of Florida unsuccessfully, she announced the 2020 convention will be in the Port Canaveral (Melbourne), Florida area, which is experiencing a resurgence of the Space program, with Alan Gentleman as chairman. She invited everyone to help with these conventions.

Karlynn Morgan, Membership Chair, reported 674 individual members and 39 Shell Club memberships. Six members died since the last convention. She will email members to ask participation in online renewal rather than mail. PayPal is an option. Karlynn encouraged members to invite friends and, especially, young people to join COA.

There was no response for new business from the attendees. President Lee noted that two new documents (COA Gift-in-Kind Policy and Procedures as well as COA Leadership Code of Ethics) were posted on the Jacksonville Shell Club website and would be transferred to the COA website and printed in *American Conchologist*.

Changes in COA leadership were announced by President Lee. Jim Brunner resigned as Member at Large and was commended for his 25 years of leadership. Harry announced Amy Dick would join the Board as Member at Large, and would also assume the Advertising Manager role for *American Conchologist*.

COA has a biennial cycle of elections. The Nominating Committee for the 2018-2020 term was appointed: Chairman, Dave Green; Tom Grace; and Rick Edwards. The slate will include nominees for President, Vice President, Treasurer, Secretary, and Trustee.

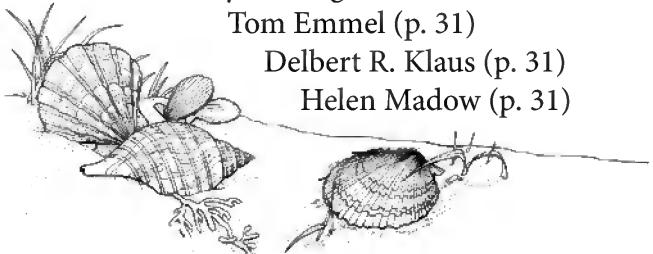
Steven Coker made, and Dave Green seconded a motion to adjourn. The motion carried. The annual business meeting was adjourned at 4:04 PM.

Addendum: There followed a presentation by Dave Berschauer and Dave Waller, who will co-chair the 2018 COA Convention in San Diego. Dates are August 28 – September 2, 2018. The convention logo by artist Lisa Lindall (SDSC Secretary and board member) was printed on the back cover of the convention program book. Check the COA website for hotel location and registration, which is scheduled to be open about September 1, 2017.

Phyllis Gray  
COA Secretary  
Draft October 31, 2017  
Edited by H.G. Lee 29 January 2018  
Draft finalized April 2018

## In memoriam:

Paula Joy Della Bosca  
Phyllis Diegel (below)  
Tom Emmel (p. 31)  
Delbert R. Klaus (p. 31)  
Helen Madow (p. 31)



**Phyllis Diegel** was a long-time member of COA, joining in the 1970s. She was also a member of various local shell clubs and supported each with dedication. She was an avid snorkeler and collected a wide variety of marine and terrestrial mollusks. Always soft-spoken and unassuming, she had a great sense of humor and made many friends in COA. When Phyllis heard I was writing a book on nerites, she went out of her way to help. All of a sudden I was getting packages from Phyllis with nerites she purchased at different local shell club shell auctions. This included a specimen that proved to be the largest recorded *Nerita* to date. Phyllis refused any payback for the cost of the shells or postage. She said she just wanted to help if she could, thinking it a worthwhile project. Thanks again Phyllis!



*Mitrella phyllisae* Duerr, 2008,  
8mm Miocene fossil from Florida,  
named for Phyllis (as were  
some five other fossils).

Tom Eichhorst

**Tom Emmel** passed away in what is surely sad news for Lepidopterists and Malacologists. Tom, “an expert on Lepidoptera and Land Snails,” passed away on May 29th while in Brazil. Tom was a quiet dynamo of research on Lepidoptera and just a month ago had a new species of butterfly, that he collected 60 years

ago, “discovered” as a new species and named after him. He collected the only known specimens of what is now *Cyllopsis tomemmeli* Warren & Nakahara, 2018, as a 17 year old during a three month expedition through southern Mexico and Honduras. He was also an expert on *Liguus* land snails and conducted research on them as well as butterflies. He was a genuinely nice guy and brilliant. He will be missed. One of his papers on *Liguus* is:

**Emmel, T. C. and A. J. Cotter. 1995.** A summary of historical distribution and current status of the Florida tree snail, *Liguus fasciatus*. FL Game and Fresh Water Fish Comm. Nongame Wildlife Program Project Report, 467pp + viii. Tallahassee, FL.

Matt Blaine

**Delbert R. Klaus** was born to Elsie and Delbert Klaus of Burton, Texas on September 11, 1937. The family moved to Houston where he grew up and attended Reagan High School. He quit high school to join the Navy at the age of 17. He met his wife of 58 years, Kathleen (Kay) Marie Kujala at a wedding in Painesville, Ohio. Delbert and Kay were married at Bethlehem Lutheran Church in Houston on July 21, 1959. Delbert spent 23 years in the Navy, serving on a range of ships and in various commands before retiring as a Chief Petty Officer. After retiring from the Navy in 1977, Delbert went on to a second career as a Civilian Defense Contractor, retiring a second time in 2000 in San Diego. Delbert and Kay moved to Fredericksburg in 2001.



**Helen Madow** began collecting shells in earnest in the early 1970's. In the beginning, it was just at the beaches of Long Island, New York. As opportunity and finances permitted, she and husband Stanley vacationed to collect, first to Sanibel Island, FL, and then the Caribbean, and beyond. A longtime member of the Long Island Shell Club, Helen's exhibits won several blue ribbons, and one year their Laura Atkinson Memorial Trophy. Her exhibit of local shells resided for a time at a public Information Center along the Southern State Parkway on Long Island. She prepared an informative slide show about mollusks that she presented at several venues over the years. A perennial visitor to the COA Conventions, she especially enjoyed meeting and learning from so many knowledgeable people. Her passion for shells brought her many dear friends and enriched her life greatly. Helen passed away on April 1, 2018. Her sizeable collection has been donated to a high school in New Jersey, overseen by an enthusiastic science teacher.



**The Wellington Shell Club is pleased to announce  
that it will host a New Zealand Shell Show  
in Wellington at 'the hub'  
Toitu Poneke Community and Sports Centre  
3 Kilbirnie Crescent, Wellington  
from 1st to 2nd December 2018  
Contact the Wellington Shell Club  
at (04) 380 8277 or [wellingtonshellclub.org.nz](http://wellingtonshellclub.org.nz)**

# James Cordy, a life of shells

F. Matthew Blaine



**Jim and Bobbi Cordy.**



**(Above & below): Jim Cordy with some of his collection and the many awards he has won.**



James Cordy, (hereafter referred to as Jim), is a man of few words and those words are almost always about shells. I first met Jim about 15 years ago when my wife and I sailed down the East Coast of the United States in our sailboat *Grace*. We stopped in Melbourne, Florida, to visit my wife's parents for a few days and noticed a sign on the side of a road that advertised a shell show put on by the Astronaut Trail Shell Club. We decided to see what a shell show was like. It was there that we met Jim Cordy. Eventually we joined the club. After joining we went on three of Jim and Bobbi Cordy's shelling expeditions. The Cordys also invited us to visit their home to see their magnificent collection.

Jim was born in October, 1932, in a small town in southern Arizona, near the Mexican border. When he was around 5 years old, he and his family moved to California. As a young boy he was mildly interested in insects and even started to collect a few, but that interest did not stick. He graduated from Glendale High School and after graduation, joined the US Army where he worked on cracking code in the Korean War. He was in the Army from 1953 to 1956. After that he was able to get a Civil Service job, his first job, at White Sands, New Mexico. He met his future wife, Bobbi at a wedding there. They married in 1959. James matriculated at San Francisco State College and earned a degree in Mathematics in 1960. A few years later, in 1963, their daughter Denise was born.

His next job was at U. S. Naval Missile Facility, Point Arguello, California, which was later to become South Vandenberg AFB. There was a beach nearby their home

where he and his family would take walks. One day they collected some shells that had washed up on the shore and they brought them home. This first collection of shells was displayed in a bowl on the dining room table. Jim started checking the tide tables and timed their walks so that they would be at low tide, which made collecting better. He joined a local shell club, The San Diego Shell Club. They only used binomial Latin names which he quickly learned. Along with this growing interest he became a certified scuba diver and began diving for shells along the California coast. He had the bug and Bobbi was right there with him.

When his job in California ended, he applied to NASA and got a job at Titusville, FL. Taking the job re-

quired a move across the country, but once settled in, he and the family continued collecting shells and they joined the Astronaut Trail Shell Club. He earned his scuba qualification as a Master Diver and made many scuba dives off Boynston Beach, Florida. There he was able to collect excellent specimens for his collection.

This was happening around the time when the scallop shell dump mounds were open for shellers to collect. He spent many hours digging for specimens in those hot smelly mounds. Jim was at the dump so much that he was crowned "Mayor of the Scallop Dump" by his fellow shell collectors.

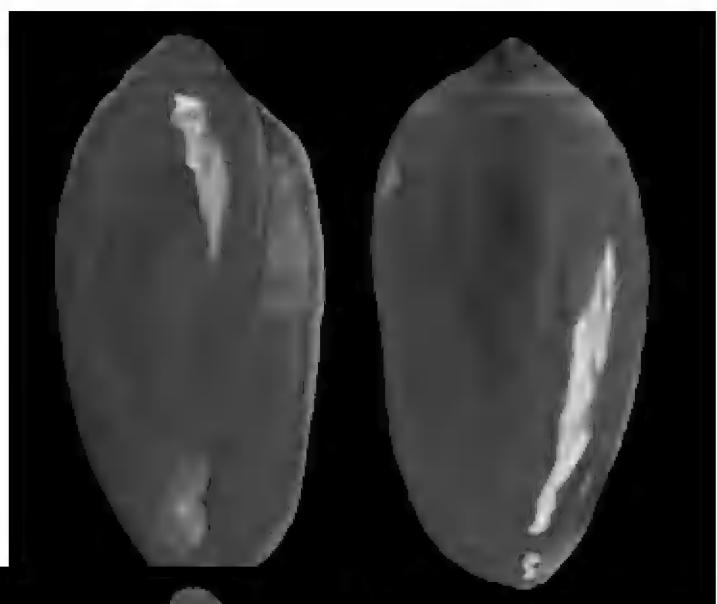
While he had many delightful experiences diving and collecting shells in Florida, he found his job at NASA, which was writing programs, was becoming extremely stressful. This was due to the pressure of constant deadlines. He decided to take early retirement and spend his time building his expanding shell collection. By this time Jim had amassed a large and diverse collection by self-collecting and by swapping shells with other collectors and dealers. He proudly will tell you if asked, that he has never "bought" a shell. From that point on, his time would be spent collecting, cleaning, and arranging his shells into an extraordinary collection. He also built displays to enter in various shell shows where he won many trophies.

While Jim was collecting and exhibiting shells, Bobbi was a full partner in his endeavor. She helped make labels, wrote a booklet on how to enter a shell show competition, helped set up shell shows, and worked on her own shell craft projects. Eventually she began accurately sculpting the animal that lived inside of shells. She used the shell and then after extensive research, modeled the animal. She placed the sculpted animal in the shell depicting the appearance of the living animal. Bobbi used colored palmer clay for this. Bobbi also helped organize the trips that they took to Eleuthera and other Bahamian islands. They began taking a couple trips a year to Eleuthera. Jim has continued to do this for at least 20 years now. Currently he has more firsthand local knowledge of the shells of Eleuthera than any other living person.

He made two discoveries of new species from Eleuthera. The first is *Volvarina jimcordyi* and the second is *Volvarina cordyorum*. Shortly after the shells were named there was an article in the local newspaper about Jim and the two new species that he found. He received a telephone call from the Brevard Museum of Natural History telling him that they had a collection of shells donated to them by Johnny Johnson. They asked if he



**One of Bobbi's mollusk models, in this case a fine representation of *Festilyria duponti* Weaver, 1968. These 'living sculptures' proved quite popular among collectors.**



**Two marginellids named for Jim. Above is *Volvarina jimcordyi* Cossignani, 2007, 8mm, Eleuthera. To the left is *Volvarina cordyorum* Cossignani, 2009, 8mm, Bahamas.**



One of the Cordys' cabinets in the Cordy Johnson Hall of Mollusks at the Brevard Museum of Natural History.



One of the museum cabinets, displaying a rather wide assortment of shells from small turrids to giant cassids.



Part of a scallop display in the Cordy Johnson Hall of Mollusks. Color and size were carefully selected to appeal to the public.



Closeup of a display with *Terebra maculata* (Linnaeus, 1758) and what appears to be *Cerithium nodulosum* Bruguière, 1792, in the foreground.

would like to take a tour of that collection. He and Bobbi did want to do that. They went to the museum to find the Johnny Johnson shells housed in the basement, which was not readily available to museum goers. Bobbi asked if they could set up a display for the museum so that people could see the shells. Her idea was that they could make a shell museum. Jim was all for it.

The museum allowed them to take one of their huge rooms to set things up. It would be part of the larger museum but was called the Cordy Johnson Hall of Mollusks. It incorporated many of the larger shells in the Johnson collection and many shells that Jim donated. Jim realized that most of the shells in the Johnny Johnson collection were small. These are of high interest to collectors and scientists, but he didn't think they were the kind of thing to interest the general public. He commissioned four custom cabinets and donated them to the museum. He also used three other cabinets and two cases that contained 24 drawers for housing the growing collection. He and Bobby worked every Saturday for over a year, arriving at the museum in the morning and working until three or four in the afternoon. They put the shells in the different display cabinets and cataloged the collection. They also made labels for each shell and some large posters that showed how the families of shells were related. Eventually, in November of 2010, the museum had a grand opening party for the Cordy Johnson Hall of Mollusks.

For several years this huge display of shells was open to the public at the Brevard Museum of Natural History. Like many other museums the Brevard Museum of Natural History began having financial problems and was close to bankruptcy. Eventually the Florida Historical Society took over the museum, thus saving it from bankruptcy. After taking over, The Society had an opportunity to acquire a display on the Hubble Telescope from NASA. Thinking



**Jim working on shells at the dining room table – dinner will have to be elsewhere.**



**One drawer of Jim's collection.**



**Another drawer of Jim's collection.**

such a display would attract more people to the Museum, they decided to use the room in which the Cordy Johnson Hall of Mollusks was located to install the new display. Jim was informed that they would have to move the shells out of the room. As a result The Cordy Johnson Hall of Mollusks was disassembled and lost.

Some of the shelves in cases are still on display, however. They are on the first floor of the museum and can be seen by the public. Unfortunately as a result, many of the shells once on display are now in storage in the basement. They are inaccessible to the public along with all of the posters and other material that the Cordys made and donated to the museum. The original room had seven large glass cases with two cabinets containing 24 or so drawers all filled with shells. Most of the small shells are also now inaccessible to the public. One other disconcerting result found when visiting the museum recently was a basket of very expensive specimen shells sitting on top of the cabinet there for kids to pick up and play with!

After Bobbi's death and a major health issue occurring post procedure to improve his knee, Jim is back in good



**Jim and Bobbi Cordy.**

health and spirits. He leads trips to Eleuthera and Mexico, where he continues to collect shells and improve his personal collection. He enters many shell show competitions with winning entries. Jim Cordy is still pursuing his lifelong passion for collecting shells.

#### **Credits:**

Photographs of *Volvarina jimcordyi*, *Volvarina cordyorum*, and the model of *Festilyria duponti* by James Cordy. All other photographs, F.M. Blaine.

Dona W. Blaine for suggestions and proofreading.

#### **F. Matthew Blaine**

##### **Curatorial Associate**

Delaware Museum of Natural History

##### **Research Associate**

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##### **Research Associate**

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# Philippine helicostyline land snail diversity, distribution and areas of endemism: an effect of forest type? (COA Academic Grant Brief Report)

Gizelle A. Batomalaque

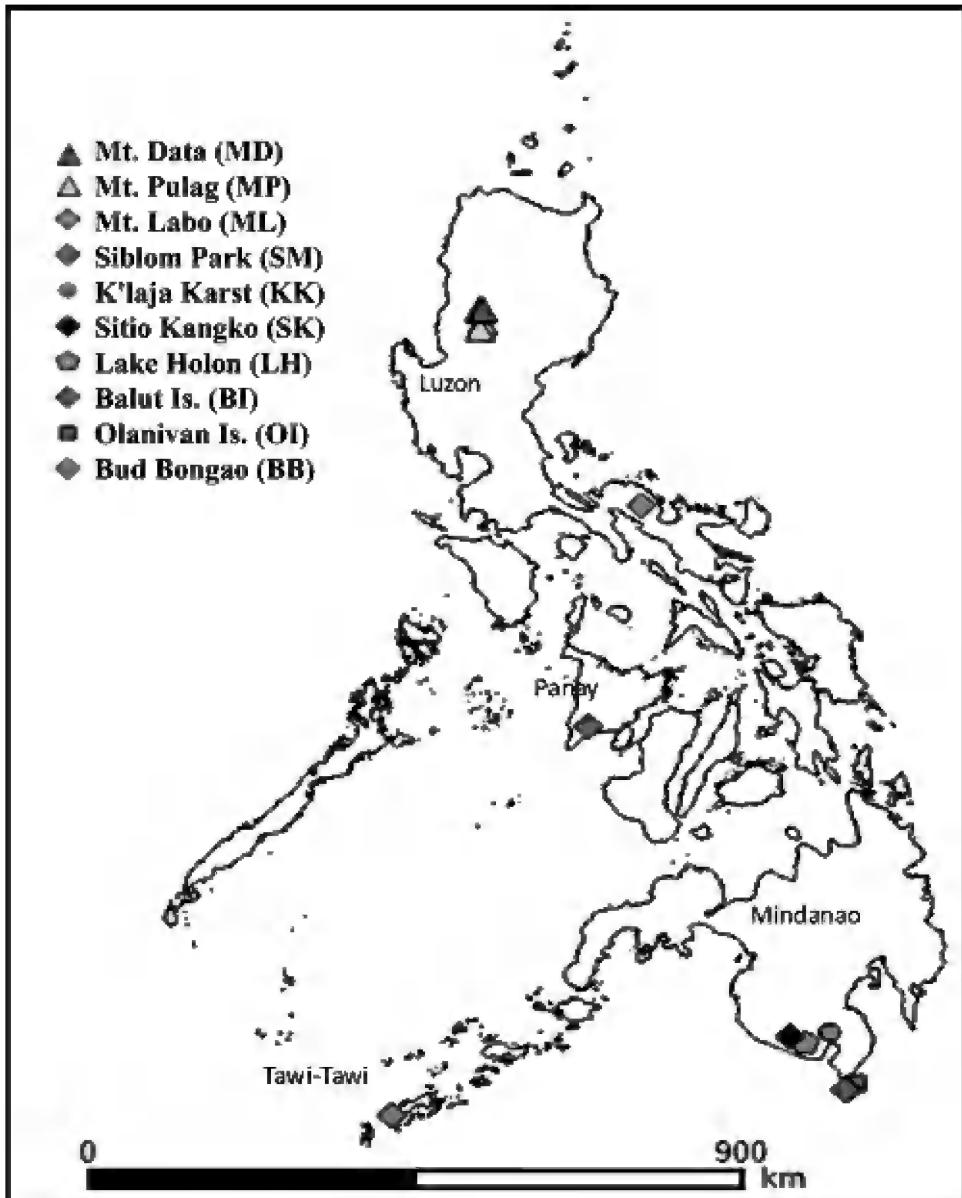
## Background

The terrestrial malacofauna of the Philippines has received little attention in terms of biodiversity studies, or even assessments for conservation. Among the most speciose groups of land snails in the Philippines is the subfamily *Helicostylinae*. This project aimed 1) to determine whether areas of endemism coincide with different forest types based on distributions, and 2) to compare species assemblages (including non-helicostyline land snails) in different forest types. Through the Conchologists of America research grant, I conducted fieldwork in several sites in the Philippines, especially the southcentral region of Mindanao Island. The grant covered transportation expenses for myself and one to three volunteers (depending on the site).

Due to a few problems in permit requirements and communication with potential contact persons in the different places, most of the target sites were not visited. Alternative sites, however, were visited. In late April through June, and early August of 2016, I traveled to ten sites to collect land snails (Figure 1): Mt. Data National Park and Mt. Pulag National Park in the Cordillera region, northern Luzon Island; Mt. Labo in Camarines Sur, southern Luzon; Sibalom Natural Park in Miag-ao, Panay Island; K'laja Karst, Sitio Kangko, and Lake Holon in southcentral Mindanao Island; Balut Island and Olanivan Island of the Sarangani Province, and Bongao, Tawi-Tawi. For each site, we spent one to three days in search of snails. Travel time to the sites varied from half to a whole day.

The collection sites were varied in terms of forest type and climate type. Mt. Data and Mt. Pulag are both mossy forests whose climate is relatively dry from No-

vember to April, and wet during the rest of the year. These forests are bordered by agricultural land. Mt. Labo is considered a tropical lowland evergreen forest, and has no dry



**Figure 1. Map of collection sites, color-coded according to locality.** The shapes represent their respective forest types: triangle – mossy forest, diamond – tropical lowland evergreen forest, circle – forest over limestone karst, pentagon – tropical montane forest, square – moist deciduous forest. For each site, we spent one to three days searching for snails.

season with very pronounced rainfall from November to April. Sibalom Natural Park is also a tropical lowland evergreen forest with a climate that has two pronounced dry (November to April) and wet (May to October) seasons. The sites in Mindanao Island and its nearby islands have similar climate types, wherein rainfall is evenly distributed throughout the year. K'laja Karst, as the name suggests, is a forest over limestone karst, though the current forest is very patchy due to vast agricultural land. Sitio Kangko is an area where agro-forestry is being practiced. That is, the dipterocarp forest is maintained, but the understory is a plantation of *abaca* (*Musa textilis*, a type of banana). Lake Holon, on the other hand, is a tropical lower montane forest surrounding a crater lake. Balut Island is a tropical lowland evergreen forest, where some patches have also been converted to *abaca* plantations. Olanivan Island is a very small with a small patch of tropical moist deciduous forest; most of the island's area has been converted to a coconut plantation.

A total of 56 species belonging to 14 families were collected from the sampling sites (Table 1). These are currently stored in the Academy of Natural Sciences (ANS) Malacology Department. This does not include microsnails, which are yet to be sieved from the top soil and leaf litter samples. Mt. Data and Mt. Pulag shared five species, which was expected. Although vast areas of agricultural land separate these sites, both are part of a continuous chain of mountains and are both mossy forests. Species in Mt. Labo and Sibalom Natural Park were different from the other sites despite having similar forest types as Balut Is. and Bud Bongao. In Mindanao Island, four species were found in more than one site. Only one species was common to Balut and Olanivan Islands, while Bud Bongao did not share common species with the rest of the sites. It is possible that similar microsnail species will be found once the soil samples have been sieved and sorted.

The differences in forest types reflected the different assemblages, and with more extensive sampling, more defined species distributions will be observed. Due to the el Niño season in 2016, only a few of the larger snails (camaenids and bradybaenids) were found alive, and instead were empty shells. The presence of *Achatina fulica* even in the mountains was not surprising because of the extent of land conversion for agriculture.

For my thesis, which deals with the phylogeny and biogeography of helicostylines, DNA was successfully extracted from seven species of live helicostyline land snails collected during the fieldwork. These were sent for sequencing, and together with previously collected samples, will be used for further phylogeographic analyses.

The top soil and leaf litter samples are yet to be sifted and sorted for microsnails. The samples were deposited in the Institute of Biology, in UP-Diliman. I am currently preparing for another fieldwork this summer to visit priority areas, which are Sibuyan Island, Catanduanes Island, and Eastern Mindanao. With the collation of data from this com-

ing fieldwork and the previous trips, I will be able to come up with comprehensive comparisons of species assemblages in different types of forests across the Philippines. Furthermore, the distributions of helicostyline species entered on a map of forest types will be able to show whether forest associations are present.

#### Acknowledgements

I would like to thank the Conchologists of America for the student grant, which enabled me to conduct fieldwork in different sites. I also thank the following local government and DENR representatives from the local units of each collecting site for the accommodation and assistance: Brgy. Captain E. Awasen and Park Superintendent M. Bayagen (Mt. Data National Park), Municipal Mayor G. Todiano and Park Superintendent E. Albas (Mt. Pulag National Park), Dr. A.M. Hadjinasser and M.R. Suraong (DENR-Region 12, Allah Valley Protected Area- Sitio Kangko and Lake Holon), and Municipal Mayor V. Cawa (Sarangani Province- Balut Is. and Olanivan Is.). Finally, I thank my field volunteers L. and M. Batomalaque, H. Lipae, R. Pedales, D. Ramos, and J.G. Roño, and local guides for their helping hands.

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A portion of mossy forest adjacent to vegetable gardens in Mt. Pulag National Park. Photo by G. Batomalaque.

**Table 1.** List of species and their respective sites of occurrence: Mt. Data National Park (MD), Mt. Pulag National Park (MP), Mt. Labo (ML), which are on Luzon Island; Sibalom Natural Park (SM), which is on Panay Island; K'laja Karst (KK), Sitio Kangko (SK), and Lake Holon (LH), which are on Mindanao Island; Balut Island (BI) and Olanivan Island (OI), found south of Mindanao; and Bud Bongao (BB), in the Tawi-Tawi region, southwest of Mindanao.

Species	MD	MP	ML	SM	KK	SK	LH	BI	OI	BB
<b>Family Helicinidae</b>										
<i>Sulfurina citrinella</i>						X				
<b>Family Cyclophoridae</b>										
<i>Cyclophorus daraganicus</i>							X		X	
<i>Cyclophorus lingulatus</i>						X				
<i>Cyclotus variegatus</i>										X
<i>Japonia</i> sp.	X	X								
<i>Leptopoma concinna</i>								X		
<i>Leptopoma marginellus</i>	X									
<i>Leptopoma pyramis</i>							X			
<i>Platyraphe coptoloma</i>					X				X	
<b>Family Rathouisiae</b>										
<i>Atopos semperi</i>								X		
<b>Family Ellobiidae</b>										
<i>Pythia scarabaeus</i>									X	
<b>Family Achatinidae</b>										
<i>Achatina fulica</i>		X				X	X			
<b>Family Subulinidae</b>										
<i>Curvella quadrasi</i>			X							
<i>Lamellaxis</i> sp.										X
<i>Paropeas acutissimum</i>							X			
<b>Family Euconulidae</b>										
<i>Coneuplecta olivacea</i>									X	
<i>Coneuplecta turrita</i>								X		
<i>Euconulus</i> sp. 1 (smooth)	X									
<i>Euconulus</i> sp. 2 (ribbed)						X	X			
<i>Microcystis</i> sp.1	X	X						X		
<i>Microcystis</i> sp. 2 (larger)									X	
<b>Family Trochomorphidae</b>										
<i>Videna repanda</i>								X		
<b>Family Helicarionidae</b>										
<i>Eurybasis sylvanus</i>										X
<i>Helicarion cumingii</i>									X	
<i>Helicarion planulatus</i>			X							
<i>Helicarion tigrinus</i>	X						X			
<i>Helicarion</i> sp. (w/ tubercles)	X	X								
<i>Kaliella</i> sp.	X									
<i>Pseudohelicarion mollis</i>							X	X	X	

**Table 1.** continued.



Inside the mossy forest in Mt. Pulag. We experienced very heavy rains during sampling in this site. Photo by G. Batomalaque.



A small patch of forest on K'laja Karst, Southcentral Mindanao. The bare areas are sugarcane plantations that were recently cleared for new crops. Photo by G. Batomalaque.



Sorting of shells collected in K'laja Karst. The rainy season hasn't set in yet during the time of sampling, which may be the reason why most of the shells collected were empty. Photo by D. Ramos.



*Mariaella philippinensis* Semper, found on the underside of a tree fern leaf. This species was found in abundance on Balut Is. Photo by G. Batomalaque.



*Helicostyla (Calocochlia) mindanaensis* (Pfeiffer, 1842), collected in the abaca plantation on Sitio Kangko, south-central Mindanao. Photo by G. Batomalaque.

# ***REVISED CLASSIFICATION, NOMENCLATOR AND TYPIFICATION OF GASTROPOD AND MONOPLACOPHORAN FAMILIES***

by

**Philippe Bouchet & Jean-Pierre Rocroi**

**Bernhard Hausdorf, Andrzej Kaim, Yasunori Kano, Alexander Nützel, Pavel Parkhaev,  
Michael Schrödl & Ellen E. Strong**

**MALACOLOGIA, 2017, 61(1–2): 1–526**

**book review by David Campbell**

If you want to have the latest classification for your collection, this will be a valuable asset. The publication has two parts. The Nomenclator and Typification, by Bouchet and Rocroi, is an exhaustive catalogue of all 2604 family-level names published in Gastropoda and Monoplacophora, from Abbottellinae to Zygopleurinae. By the rules of the International Commission on Zoological Nomenclature, family-level names includes subtribes, tribes, supertribes, subfamilies, and superfamilies, as well as families. Major points of relevant ICZN rules are reviewed, providing a helpful reminder or introduction. Reading through the list of names also will give several pointers on the rules, as the reasons behind decisions about the names are discussed when the name is invalid or when issues arise. There's a helpful table of several common genus endings in mollusks that have potentially unexpected forms when you make them into family names, and some statistics on the dates of publication and geologic ages of the names. Each name has a full bibliographic reference, the type genus and type species of type genus, and notes such as whether the name is officially available to use and if there have been changes in usage (such as promoting a subfamily to a family). In addition, names above the family level (such as orders and subclasses) are included in a second catalogue. The ICZN code does not regulate names above the family level, so official validity is not an issue, but they include discussion on how names have been used and changed, if applicable. Thus, the Nomenclator and Typification tells you exactly what family names are available to use according to the ICZN rules and why. However, the ICZN rules only tell us what names are nomenclaturally available – whether the names are legal by the official rules. This does not tell us whether the names are actually useful in classification, just that they could be put to use if they seem to be useful.

The Classification, with different sections by each of the authors, takes the 2124 names that meet the legal requirements for a scientific name (out of the 2604 total)



and organizes them into a classification, judging which are subjective synonyms. In other words, here is where they have decided which of those 2124 names apply to groups that are actually different enough from others to be worthwhile to recognize. This decision is necessarily subjective. Some groups have received detailed recent study, giving high confidence in the classification; others are quite poorly

known, and the best available classification might still be a preliminary arrangement. So this classification is certainly not the final word, but it is the latest word. In particular, the results of many new molecular analyses are incorporated into the classification. It's not easy to keep up with all the studies, so this paper provides a very helpful update on recent developments in classification. Decisions made in the classification are extensively explained by almost 400 footnotes.

Not surprisingly, in the course of making such a large compilation, several problems will be discovered. A few new names were created, either to replace invalid ones or because none was available for an important group. Several problems are being submitted to the ICZN for formal decisions.

The previous edition is available at: <https://www.biodiversitylibrary.org/item/81069#page/5/mode/1up>. Besides the 12 years of updating, the previous version did not have the type species of the type genera identified. One hundred and ten additional families are recognized as valid in the new edition. A few of these are due to the inclusion of Monoplacophora, but most reflect new discoveries or revised classifications within the Gastropoda.

The bibliography is particularly valuable. Of course, you can use it to find complete references for the cited publications. But the citation is much more detailed than usual, making this a valuable guide to many important publications. Several major monographs, especially in the 1800s, were published in parts, and identifying the actual date of a particular section can be quite difficult. Rather than simply citing something like "Adams, 1841-1853", they include tables documenting which pages and figures were published when. If you are trying to track down the proper citation of a particular genus or species, a quick check of the bibliography here can settle many of the most common puzzles about the date of publication.

I have regularly referred to the first edition of the catalogue and classification, keeping both print and electronic versions handy. I also used it as the basis for the systematic arrangement of the Gastropoda in cataloguing the collections at the Paleontological Research Institution. I've already been making use of the new edition and will be referring to it frequently, until the next edition!

The volume is available from ConchBooks (<https://www.conchbooks.com/>) or from Malacologia ([malacologia@gardner-webb.edu](mailto:malacologia@gardner-webb.edu))

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## *The Beachcomber's Companion*

by Anna Marlis Burgard  
illustrations by Jillian Ditner  
Published in 2018 by Chronicle Books, LLC, CA  
128 pages, illustrated with water colors,  
ISBN: 9781452161167  
Book review by Tom Eichhorst

This is a gorgeously illustrated guide for, as the title states, beachcombers. This little book is written by a hardcore beachcomber for anyone who happens to find themselves walking a beach. For those who think the term «hardcore» might be a bit strong, here are the author's own words about beachcombers. "We're curious, compulsive, and can be a little covetous when someone finds our Holy Grail shell or sea bean or ocean-polished shard of glass. We also tend to be protectors of wildlife... Sounds hardcore to me.

The book has a fair bit of beachcomber lore and general knowledge about different mollusks and other beached items, but the heart of the book is the double page presentation of descriptive text and colorful art of some 40 shells and other beach artifacts (sea glass, sharks' teeth, sea beans, sea stars, crabs, etc.). Common names are used and this is obviously meant for appreciation of the act of beachcombing rather than a field guide. That being said, there are some nice little hidden gems as the author relates stories about her experiences with the different objects described. The artwork is accurate as well as beautiful. Our readers will easily recognize each shell depicted. The book ends with a rather extensive and well thought out index. This is a fun book and you might learn something! I found it for sale online at Target for \$11.70 and at Barnes and Noble for \$8.48. So skip one Starbucks coffee and give *The Beachcomber's Companion* a try.

Tom Eichhorst  
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# Cowries - A Guide to the Gastropod Family Cypraeidae

## Volume 1: Biology & Systematics

by Felix Lorenz

Published in 2017 by ConchBooks, Harxheim, Germany, hardcover in laminated boards, A4 size, about 21 by 29.75 cm., or 8 by 11.75 inches, 644 pages fully illustrated with color plates, maps and charts.

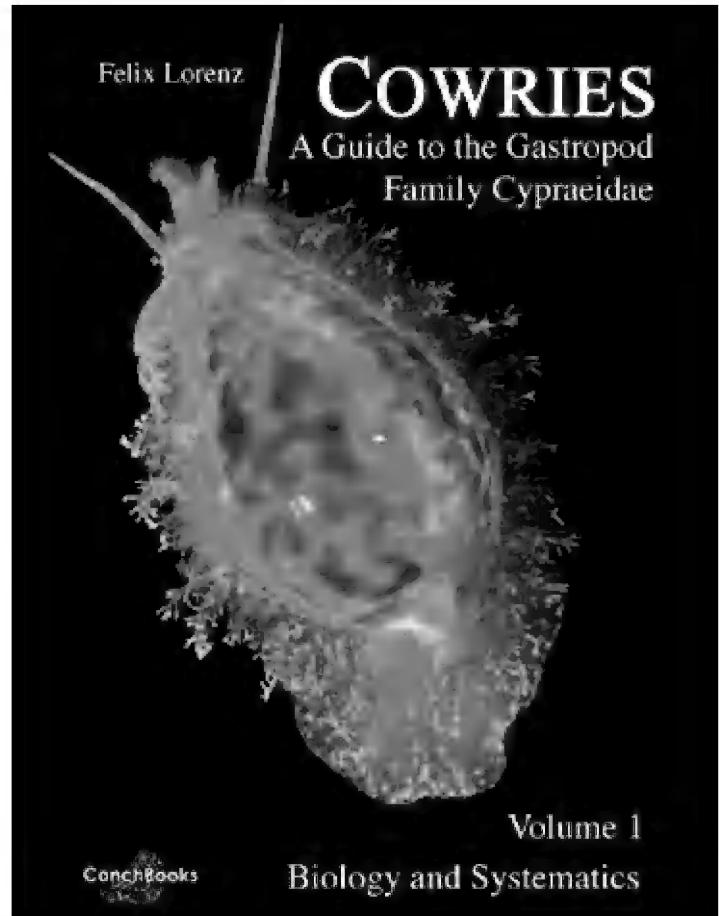
### Book Review by Richard Kent

Finally the highly anticipated sequel to *The Guide to Worldwide Cowries* by Lorenz and Hubert has been published. There is both good and bad news about the new book. We need to point out that, *Cowries, A Guide to the Gastropod Family Cypraeidae* by Felix Lorenz and published by Conch Books, is split into two volumes. At this time only Volume 1 is available.

First the good news. Everything one could possibly want to know about Cowries, live and extinct, is thoroughly discussed. This is the definitive book on the subject. The bad news. It's 644 pages of exhaustive text are intended for the advanced collector. Photographs are minimal; Volume 2 will be the photo book. The price is a whopping \$199 retail. The way the volumes are split up, readers will need to purchase both.

The first 181 pages cover in seven chapters: Cowries and Man, Animal Morphology, Reproduction and Development, The Adult Shell, Habitat and Distribution, DNA, and Cowrie Evolution. It's fascinating and essential reading that one needs to make the most out the second half of the book. The balance of the book is a systematic Cowrie Identification Guide, updating the original "Guide" to the present with numerous new subspecies and species. Collectors will especially get new insight on South African and Australian Cowries. Every species is given scientific name, synonyms, cited references, size range, habitat, distribution and a discussion. The descriptions are concise, cut and dry. One misses the flair that Wells had in his book on Cones. There are also comparison charts and maps. Lorenz illustrates each species and subspecies with a photo of the dorsum and base of a typical specimen. All are shown the same size so the minute *Cypraea microdon* is illustrated at an identical size as *Cypraea tigris*. Even though all are shown the same size, the length of the discussion for each species varies greatly. It is obvious Lorenz has his favorites! He chooses to devote much space to discussions on nomenclature and DNA. Lorenz is what is known as a "splitter" (as opposed to "lumper") and has introduced dozens of new names himself. At times the detail in these discussions can be overwhelming, even to an advanced collector.

Collectors could find much that is controversial and open to debate. One of several instances that stood out to me is that according to Lorenz, *Cypraea tigris tigris* is an Indian Ocean cowrie whereas *Cypraea tigris pardalis* is the Philippine variety, but he fails to cite the original descriptions and type specimens to back this up. Having dealt with shell dealers for years, *pardalis* is an all white tiger with minimal black spotting and no dorsal line, just like the one illustrated



in the groundbreaking Burgess book. It would be interesting to see if one dozen tigers from various populations in the Indian Ocean were mixed with one dozen from the Pacific, if any expert could correctly separate them. Lorenz says they have different DNA.

I read the book cover to cover taking a full week. Because I am an advanced collector I find the book essential. It greatly added to my understanding and enjoyment of the hobby. I can't wait for volume 2 with all the photos to be published.

A word to Mr. Lorenz - take only the information that is essential to the beginning and casual collectors and publish a condensed, concise photo guide. The hobby needs such a book. It will be a best seller!

Richard Kent  
richkent88@comcast.com

# Natural History Collector: Hunt, Discover, Learn!

by Michael Sanchez

Published in 2018 by Quarry Books, The Quarto Group, Beverly, MA. softcover, 8.5 x 11.8 inches, 127 pages, ISBN: 978-1-63159-367-3, available for \$19.99 at [www.quartoknows.com](http://www.quartoknows.com) and The New Mexico Museum of Natural History and Science.

Review by Tom Eichhorst

This little gem of a book is mainly intended for kids and has a wealth of information to offer concerning collecting natural history objects. As Mike states, "Natural history collections often begin with a single object that catches your eye. It might be an interesting rock, a fossil, or an iridescent shell. Perhaps you take it home and try to find out more about it. ...you find another example. ...the beginning of an amazing adventure." What follows is then an orderly discourse in collecting: preserving, storing, displaying, labeling, and collecting courtesy, with pages dedicated to shells, fossils, insects, minerals, plants, flowers, animal tracks, etc. Each section discusses the objects being collected with where and how to find them, collect them, curate them, and display them.

Since we are mostly interested in shells, I'll cover that section, but first I should point out, that like many readers of this journal, I am also interested in other aspects of natural history. I recently acquired a few incredible specimens of rhinoceros beetle. They needed 'relaxing' and pinning to properly prepare them for display. On a chance, I checked Mike's book and sure enough, he provides complete instructions for preparing my specimens. Okay, back to shells. The short section on shells begins with, "Meet the Mollusks," then "How To Build Your Collection," "Be A Savvy Collector," "Be A Conscientious Collector," "Collector's Checklist," "Caring For The Collection," and a craft project for a display box. This is really well presented and thought out, and might be the perfect introduction to shell (or other items of natural history) collecting for youngsters. If the interest continues, then it is maybe time for Abbott's "Golden Guide."

You know a youngster interested in the natural world? I don't think you can go wrong with this colorful little book. It can be a bit difficult to find on the publisher's web site - just search for the title.

Tom Eichhorst  
[thomas@nerite.com](mailto:thomas@nerite.com)



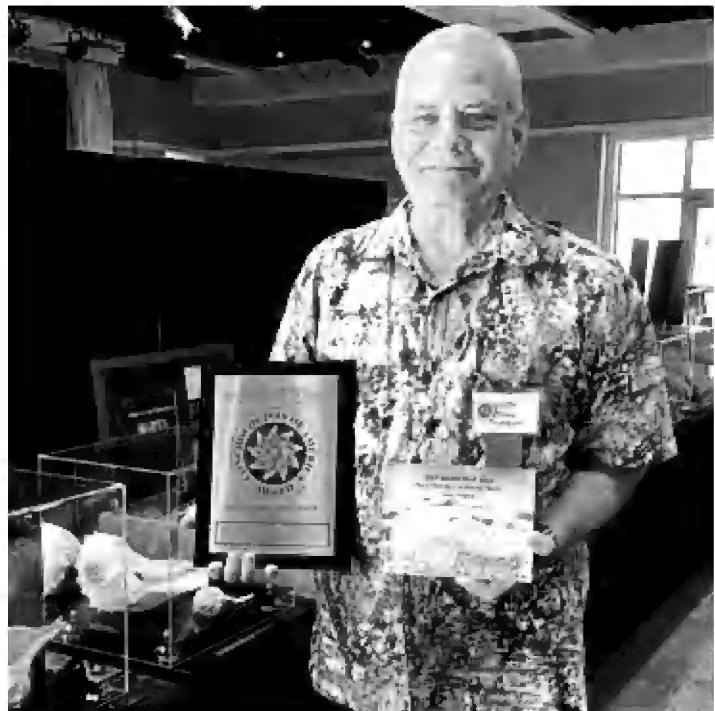
## Sanibel Shell Festival – 1-3 March



The 81st Annual Sanibel Shell Show was a wonderful success. All the Scientific Division and Artistic Division exhibits were outstanding, the weather was perfect, and the visitors expressed surprise and wonder as they wound their way through the exhibit halls. See the club web site for complete results: <https://sites.google.com/site/thesanibelcaptivashellclub/annual-shell-show/2018-shell-show>.



The du Pont Trophy for "Most Outstanding Entry in Show," was won by Gregory Curry, Sr., of Key West, FL



Doug Thompson of Lynn Haven, FL, won the Conchologists of America Award for "Pride of the Panhandle," with 40 feet of display in 20 cases, showing species found by scuba in NW Florida Gulf of Mexico.

## Broward Annual Shell Show – 13-14 Jan



Amy Tripp won the du Pont Award and the Jim Vunkanon Memorial Award.



Ron Bopp of Bradenton, FL, walked off with the Conchologist's of America Award for "Cone Shells," a 36 foot display of 16 cases of Conidae, including explanations of cone toxins and other interesting aspects of this family.



(Above): Gene Everson had yet another winning display, this time winning the Len Hill Memorial Trophy.

(Below): Scientific Judges (L) Kevan Sunderland and (R) Harry Lee.



(Above): Joyce Matthys took home the American Museum of Natural History Award and the Gerrit de Graff Memorial Trophy.

(Below): Anne Joffe won the Neil Hepler Most Educational Award for a display explaining mollusks and their shells.



## Sarasota Shell Club Shell Show

The Sarasota Shell Club Shell Show (9-11 Feb) moved to a new venue this year – central Sarasota. We had 27 scientific entries for our judges (Dave Green and Bernie Peterson) to view and evaluate. The new venue (the Potter Building, next to the Robert's Arena) brought in more visitors (1,280) and shell enthusiasts than in the last five years.



**Pat and Bob Linn** won the Conchologists of America Award for an 18 foot display of 7 cases titled, “The Olive Shells of the World.”



**Ron Bopp** won the du Pont Award for his cone display.



**John Jacobs** won Best Small Scientific, for his display of giant limpets!

## St. Petersburg Shell Show



(Below, left): **Anne Joffe** won the Conchologists of America Award at the St. Petersburg Shell Show. More on this show in the next issue.

(Below, right): **Mary Ann Duke** won the Conchologists of America Award at the Marco Island Shell Show.

## Marco Island Shell Show





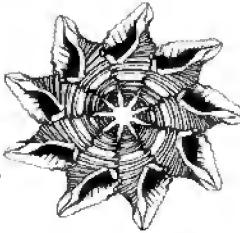
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# American CONCHOLOGIST



Quarterly Journal of the Conchologists of America, Inc.

# CONCHOLOGISTS OF AMERICA, INC.



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world. In 1995, COA adopted a conservation resolution: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

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**Editor's comments:** If you did not make it to the COA convention in San Diego, then you missed a great event. We had perfect weather the entire time and a plethora of activities to keep up the group's interest. It obviously took place too late for this issue, but I will have a bit more on the convention in the December issue.

Before I get into this issue's contents, I have a couple of very important reminders for COA members. First, the 2019 COA convention on Captiva Island (celebration of R. Tucker Abbott's 100th birthday) is scheduled for 17-23 June 2019 (17-18 field trips and 19-23 convention). This is two months earlier than this year's San Diego convention, so we will have to move a bit quicker with reservations and travel plans. Don't delay. Second, this earlier convention directly impacts nominations for the *Neptunea Award*. In order to process the results and prepare the awards for the convention, **the Neptunea Award nomination deadline is 15 April 2019**. Remember, you can, and in fact are encouraged to, re-nominate a deserving person. Page 12 of this issue has the suggested format, but whatever format you choose, get those nominations in to Everett Long (nlong3@earthlink.net) before tax day! Bruce Neville was the very deserving 2018 *Neptunea Award* winner.

Now for this issue. Both covers are indications of future events: an article by Simon Aiken in the December issue and a new book by Charles Rawlings. Both individuals have contributed greatly to *American Conchologist* over the years. They, like Marcus and Jose Coltro of [www.femorale.com](http://www.femorale.com), and Guido and Philippe Poppe of [www.conchology.be](http://www.conchology.be), have **always** said yes to any request for photographs or shell information. These folks keep this journal alive -- thank you all.

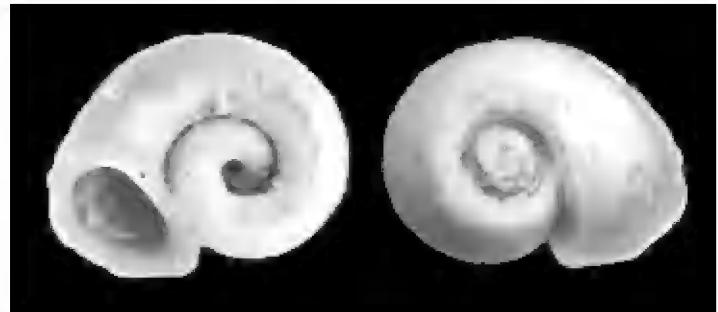
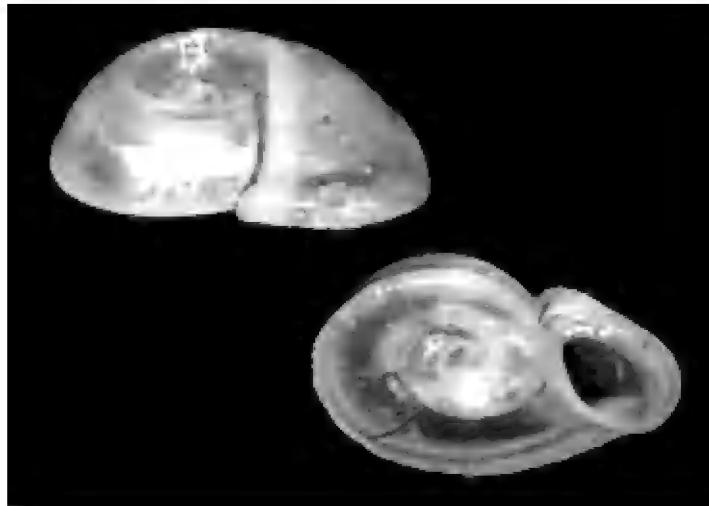
We are lucky with this issue to have a 'little' mystery by Bruce Neville, an adventure by Amy Dick, several COA Grant Reports, some shell show results, and lots of book reviews. Hopefully, there is something for everyone. If not, take out a pen!

**Front cover:** *Suavitas leucoraphe* (Pfeiffer, 1851) photographed by Simon Aiken ([www.simonsspecimen-shells.co.uk](http://www.simonsspecimen-shells.co.uk)) 8 miles SE of La Cumbre, Dominican Republic. The shell of this animal is less than 10mm and it is no small feat to find, much less photograph. Simon will have a special article in the December issue on the snowflake snail.

**Back cover:** *Haminoea* sp. photographed by Charles Rawlings at night off of Olango, Philippines. This is another small, though rather colorful mollusk that seems to be rarely encountered. Charles had a great piece in the June issue on Sri Lanka and by the time this issue is published will have his third 'coffeetable' shell book in print.

# A mystery (partly) solved

Bruce Neville



Figures 1 (left) - 2 (above). *Moerchia* sp. A, 2.47mm greatest diameter, trawled in 220m, Aliaguay Island, Philippines, coll. BDN #9089. Both images are my mystery shell. The left image was taken with a low power microscope and the right image with a flatbed scanner.

A few months ago on an online auction, the strange, unidentified shell shown in Figures 1 and 2 attracted my attention. Always up for a challenge, I bid on and managed to acquire the specimen. Then the real fun began.

Since it was from the Philippines, I initially hoped that Poppe's excellent four-volume\* set might hold a clue to its identification. Alas, such was not to be the case. Okutani's *Marine Mollusks in Japan* is also very good for micros, and I hoped it might at least get me in the neighborhood. Again, there was nothing close.

Since I didn't have any other good literature sources for micros, I turned to that other comprehensive source, Harry Lee. I managed to stump even Harry, but he did provide an important clue. He suggested that it looked like some sort of strange tornid. (If you can't identify a micro, it's probably a strange tornid.) I had already been looking at the Tornidae, as a couple other micros that I picked up from the same dealer in the same auction turned out to be tornids.

So, I did a Google image search on "philippines tornid," and I found the shell, complete with animal! It was labeled *Uzumakiella* species 01. WoRMS lists a single species of *Uzumakiella*, *Uzumakiella japonica* Habe 1958. That should have been in Okutani, so how could I have missed it? Going back to Okutani, the photo of *Uzumakiella japonica* is very different from the one on the Internet. So, who is right? At a recent COA, Phil Fallon in another context, admonished us, basically, to "trust, but verify," and check the



Fig. 3. *Cyclostrema (Morchia) obvoluta* A. Adams 1860, as figured in A. Adams (1860: pl. 255).

type. So, I needed to see the type of *Uzumakiella japonica*. I requested Habe's original paper on interlibrary loan, and it showed that Okutani's interpretation of *Uzumakiella* is correct. That species shares the down-turned aperture, but not nearly to the degree of my shell or the one in the web photograph. Furthermore, *Uzumakiella* has a rounded periphery and base and strong spiral ribs, while my shell has a strong carina at the periphery, a very flattened base, and no strong spiral ribs. So, it was back to the drawing board, or at least back to Google.

\*When I wrote this article, there were only four volumes in the set. In the fifth volume (2017), Sheila Tagaro illustrates two Philippine specimens of *Moerchia* as *Moerchia morleti* P. Fischer 1877. Because they lack the characteristic beaded carina of Fischer's species, which he considered an important diagnostic character, I don't believe they are that species. Figure 6 shows the distinct sculpture of *M. deformata* Rubio and Rolán 2014. Figure 7 lacks the sculpture and matches my specimen and the specimen illustrated in Geiger et al. (2007), which I believe to be still unnamed.



Fig. 4. *Mörchia moreleti* Fischer 1877: pl. 4.

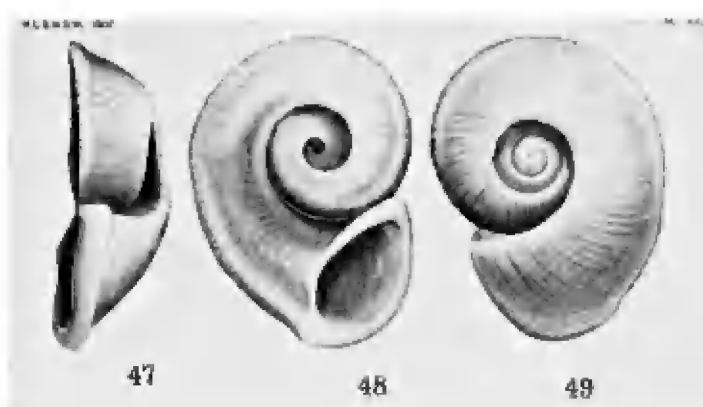


Fig. 5. *Moerchia introspecta* Hedley 1907: pl. 20.

This time, the same search hit on *Moerchiella moreleti* P. Fischer 1877. Could that be my shell? WoRMS lists *Moerchiella* Thiele 1924 as an unnecessary replacement name for *Mörchia* A. Adams, April 1860, non *Mörchia* Albers in Martens December 1860. Adams's name has been emended to *Mörchia*, according to Art. 32.5.2.1 of the ICZN, although this is probably an unjustified emendation, as Mörch was Danish, not German.

Adams included a single species, *Mörchia obvoluta* A. Adams 1860, from the Straits of Korea, which becomes the type species by monotypy. Adams did not figure his species in the original description, but he contributed the monograph on *Cyclostrema* to Sowerby's *Thesaurus* (Adams 1866), where it was included and figured as *Cyclostrema (Mörchia) obvoluta*. His illustration (Fig. 3) shows the down-turned aperture, but it, too, has a more rounded periphery than my specimen.

The next author to describe a species of *Mörchia* was P. Fischer, who described two species from China. He figured one species, *M. moreleti* P. Fischer 1877, which is very close to my specimen, except for the beaded carina on the periphery (Fig. 4). His other species, *M. biplicata* P. Fischer 1877, is unfigured and has not been seen nor heard from since. Hedley named *Moerchia introspecta* Hedley 1907 from Queensland, which looks even more like my specimen

(Fig. 5).

Finally, Rubio and Rolán (2014) described two new species of *Moerchia*, *M. deformata* and *M. perforata*, from the Solomon Islands and reviewed the known species. The holotype of *M. perforata* has a strong carina on the top of the whorl. The holotype of *M. deformata* is more similar to my specimen, but has fine, though clearly visible concentric ribbing all along the shell. Recent availability of living specimens allowed Rubio and Rolán to transfer the genus to the family Pyramidellidae.

Geiger et al. (2007) illustrate a specimen of a *Moerchia* from Panglao, Philippines, that they identify only as "Moerchia sp." My specimen appears to match Geiger et al's specimen, but it does not yet appear to be named. Specimens of *Moerchia* still appear to be uncommon. Until more specimens are known that can give us a better understanding of interspecific variation and distribution, I think I'll be satisfied with their identification of "Moerchia sp."

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Members of the CenPenn Beachcombers (sometimes called the CenPenn Shell Club), celebrated at their annual picnic in August outside of Lancaster, PA. It was reportedly a "balmy 93°" after a previous two days of rain totaling some five inches. According to the club website ([www.cenpennbeachcombers.org](http://www.cenpennbeachcombers.org)): "Founded in 1982, our club is a group of seashell enthusiasts and collectors in the Susquehanna Valley region of Pennsylvania, between Philadelphia and Harrisburg. We promote the study of mollusks, shells, and shell collecting. Through our yearly auction we provide financial support to the local North Museum of Natural History and Science in Lancaster, PA, and to the Bailey-Matthews Shell Museum in Sanibel, FL. We also support natural resource conservation and are members of the Lancaster County Conservancy. And we contribute to the Grants to Malacology of the Conchologists of America." Photograph by Barb Vanderstappen, a professional wedding photographer.

**Sitting L-R:** Henry Spafford, Vangie Spafford (Secretary), Cheryl Steigerwald, Pat Price, Bob Ruth, and Sharon Ogden.

**Standing L-R:** John & Jamie McCune, Rusty Baughman (President), Phil Dietz, Sue Hobbs, Tom Grace, Judy Rence (VP), Al Wentzel, John Wolff (Treasurer), Liz Zizzi, Barry Norbeck, and Pete & Barb Vanderstappen.

## Attention

Convention in Captiva for 2019 is two months earlier next year.

### Neptunea Award

Voting will take place two months earlier

Deadline for nominations is **15 April 2019**

## Attention

# Report on a dredging expedition off the Louisiana coast including surprising geographical extensions

Emilio F. García

The University of Louisiana at Lafayette has been conducting explorations in the Gulf of Mexico for more than two decades, concentrating mainly on crustaceans and algae. I have been invited to “tag along” to document the mollusks collected during such expeditions. The findings have been reported in García (2000, 2002a, 2002b, 2005, 2006, 2007a, 2007b, 2008a, 2008b, 2008c, 2010, 2011a, 2011b, 2011c, 2012, 2013a, 2013b, 2013c, 2015a, 2015b, 215c) and García and Lee (2002, 2003).

Last May we had the opportunity of engaging the R/V *Pelican* on another cruise to collect in offshore Louisiana waters, from the Mississippi Delta to near the Louisiana-Texas border. Unfortunately, for reasons beyond our control, we were not able to bring with us the Benthic Skimmer, a large, specialized dredge to sample soft-bottomed, deep benthos (see García, 2007a), so we were restricted to collecting on the hard bottom tops of the pinnacles, from roughly 55 to 90m from the surface.

These areas produced the usual suspects reported elsewhere, including, among others *Isara ulala* (García, 2011) (formerly placed in *Mitra*), *Conus* sp. aff. *daucus* Crosse, 1858 (see Kohn, 2014:232), *Morum dennisoni* (Reeve, 1842), *Fusinus couei* (Petit de la Saussaye, 1853), *Haliotis pourtalesii* Dall, 1881, *Fenimorea petiti* Tippet, 1995 (fig. 1), *Astralium phoebium* (Röding, 1798) (red color), and *Siratus consuela* (A.H. Verrill, 1950) (yolk-yellow). We also collected two specimens of *Ranularia rehderi* (A.H. Verrill, 1950), an uncommon species that we reported from the southern Gulf of Mexico for the first time in 2005, and from the northern Gulf in 2007. With the addition of these two specimens, the species seems to be well established in Louisiana, after having been collected at five stations, from 91°02'W to 92°27'W, in 64 to 79m.

Also of great interest was a “crabbed” specimen of *Bursa ranelloides* (Reeve, 1844) (fig. 2). A live specimen of this species was obtained by Charlotte Thorpe (see <http://www.jaxshells.org/brand.htm>) during a 2008 expedition on *The Pelican*, sponsored by the well-known collector and student of Conidae, Bill Cargile; the specimen recently collected is only the second known from Louisiana waters. This population differs from most Atlantic specimens of *B. ranelloides*, a form previously known as *B. r. tenuisculpta* Dautzenberg & Fischer, 1906) because of its much smaller

and more numerous nodes; however, this taxon is now considered to be only a form of the nominal species (Beu, 2010: 55). The Louisiana form is very similar to the holotype of *B. ranelloides*, as well as to the western Atlantic population from the island of Guadeloupe (Beu, 2010: 348-349, pl. 4, figs. 2, 4). Moreover, as Beu points out, *Bursa benvegnuae* Penna-Neme & Leme, 1978, from Brazil, is an intermediate form.

Also collected on this trip was a second specimen of a *Mathilda* sp. aff. *hendersoni* Dall, 1927 (fig. 3), a species that had been collected off Louisiana in 2003 and which was reported by Lee (2009: 135) together with his own sample(s) (his fig. 658). As Lee stated, this species differs from *M. hendersoni* mainly in its conspicuous axial sculpture, a character not described by Dall. It does not seem to be an ecological form of *B. hendersoni* as, besides Lee’s sample(s), I have photographed the same morph from Contoy Light, Yucatán, Mexico, in the Sunderland collection. Also, the specimen pictured by Rios as *M. hendersoni* (1994; sp. no. 953) is this form.

Not recorded from Louisiana waters before this cruise was the worm shell *Thylacodes decussatus* (Gmelin, 1791) (previously *Serpulorbis*) (fig. 4). The fully adult specimen was collected in 68m of water, which seems to be a record depth for a live-collected specimen. Although reported by Rosenberg (2009) and Rosenberg et al. (2009) as occurring in Texas, neither Parker & Curry (1956) nor Tunnell et al. (2010) report it. The species identified as *Dendropoma irregularare* (d’Orbigny, 1841) in the latter publication however, may be *S. decussatus*.

Before I leave the top of the pinnacles to more muddy regions I should report that our last four stations were on top of Sackett Bank, approximately situated at 28°38'N, 89°33'W, that is, about 20 miles from Southwest Pass, at the Mississippi Delta. It has been a very popular fishing ground for Louisianians for decades. When we sampled this pinnacle in 2004 we obtained 81 lots of live and empty shells; in 2011 the yield was 25; in 2014, 6, and in 2018, after 4 dredging attempts, two species were collected: *Arca zebra* Swainson, 1833, and *Pseudochama corrugata* (Broderip, 1835). We dredged many live specimens of the former, all smallish of just over an inch in length, and two live specimens of the *Pseudochama*. The rubble had that blackish tint

that is a telltale of an unhealthy habitat, and neither my algae nor my crustacean colleagues did any better.

As mentioned above, we did not have at our disposal the use of the Benthic Skimmer for deeper, muddy environments; however, there were certain stations from former trips that were very good for mollusks, so I asked Dr. Suzanne Fredericq, the principal investigator, if we could try them, even though we knew they would not be propitious for algae (her specialty) and would probably fill up right away with that indescribable thick, dark, sticky mud so characteristic of the Louisiana benthos. She agreed, so on the 5<sup>th</sup> of May we set the box dredge down for a haul of five minutes each at three stations. We knew that it was going to be intensive hard work when the dredge came up, since it would be packed with mud with the consistency of wet cement. Would it be worth it?

One of the hauls, in 110m of water, produced a *Favartia hidalgoi* (Crosse, 1869), only the second time we have dredged it in Louisiana; one *Isara straminea* (A. Adams, 1853) (formerly in *Mitra*); a *Compsodrillia haliostrephis* (Dall, 1889), and a *Diodora aguayoi* Pérez- Farfante, 1943 (fig. 5). This species had not been reported from the Gulf of Mexico *per se* (Rosenberg et al., 2009), only from Bermuda, Cuba, and south. Also in the haul came a specimen of what seems to be a dwarf population of *Cyphoma mcgintyi* Pilsbry, 1939 (fig. 6). It is the third such specimen collected in the north-central Gulf of Mexico; the second, an empty shell, was collected in 75.8m, and the third, a live specimen, in 1972 by the Lafayette SCUBA divers Mike and André Stansbury in approximately 27m of water on a reef “just” 40 miles from shore.

Another mud haul, in 150m, brought up a *Solariella multirestis* Quinn, 1979 (fig. 7), a new record for Louisiana and the northern Gulf of Mexico. The type locality for this species is off the island of Saint Vincent, in the Lesser Antilles; a second specimen, “in poor condition” (Quinn, 1979:39) was collected off Sombrero Light, Florida Keys. This Louisiana specimen seems to be only the third recorded specimen of the species. In the same haul as the *Solariella*, came up a puzzling “turrid,” which I could not identify, even at the generic level. I sent an image of the shell to the well-known turrid student Phil Fallon, who suggested it might be an undescribed *Strictispira* (fig. 8).

When we went on a *Pelican* cruise in 2000, we missed the target in one of the pinnacle stations, and went down the edge to 155m. When the dredge came up, it was filled with the type of mud described above, and a live *Petrotrochus amabilis* (F. M. Baker, 1963). In this trip we tried to duplicate the 2000 feet by dredging in the same general area and, of course, mud came up; and an empty small *Petrotrochus amabilis* (F. M. Baker, 1963) (fig. 9); and a 31.6mm *Fusinus aepynotus* Dall, 1889 (WR?; fig. 10), a species not reported from the northern Gulf before; and a *Personopsis*

*grasi* (Bellardi in Ancona, 1872)(fig. 11); and *Bathyferula cf. delannoyei* Stahlschmidt, Lamy and Fraussen, 2012 (fig. 12). What?! I’ll explain.

Beu (2010:99), says that *Personopsis grasi* is one of the largest and widest species yet recorded of *Personopsis*. It is in the family Personidae and is a rare, deep-water species in the Recent fauna. It has been obtained from fishermen traps set in 300m off Guadeloupe, French West Indies, and in seamounts in the central Atlantic. I have also in my collection “crabbed” specimens from Curaçao, Netherlands Antilles, collected in 213m. This record from Louisiana is the first from the Gulf of Mexico and the westernmost in the Atlantic Ocean.

*Bathyferula delannoyei* is the single species assigned to the “turrid” genus *Bathyferula* (Stahlschmidt et al., 2012). The five known specimens, all from empty shells, were collected in the Lesser Antilles (Martinique, Guadeloupe and St. Martin), and off Roatán Island, northern Honduras, at depths of 232 to 750m. The fact that these two shells of *Bathyferula cf. delannoyei* dredged off Louisiana were obtained in the same haul, seems to indicate that there is an established population of this species in the northwestern Gulf of Mexico. They are somewhat different from the described species and will be studied further.

Recapitulating, the approximate total of 15 minutes taken to sample three “muddy” stations off Louisiana produced four dramatic range extensions: *Diodora aguayoi*, *Solariella multirestis*, *Personopsis grasi* and *Bathyferula cf. delannoyei*. It also produced an extended geographical distribution for *Fusinus aepynotus* in the Gulf of Mexico, as well as a presumptively undescribed *Strictispira* sp. So, how much more is there to be discovered?

A complete list (and many photos) of mollusks we retrieved from offshore Louisiana waters can be found at <http://www.jaxshells.org/efg1030.htm>. The website [www.jackshells.org](http://www.jackshells.org) is owned, created and maintained by Bill Frank.

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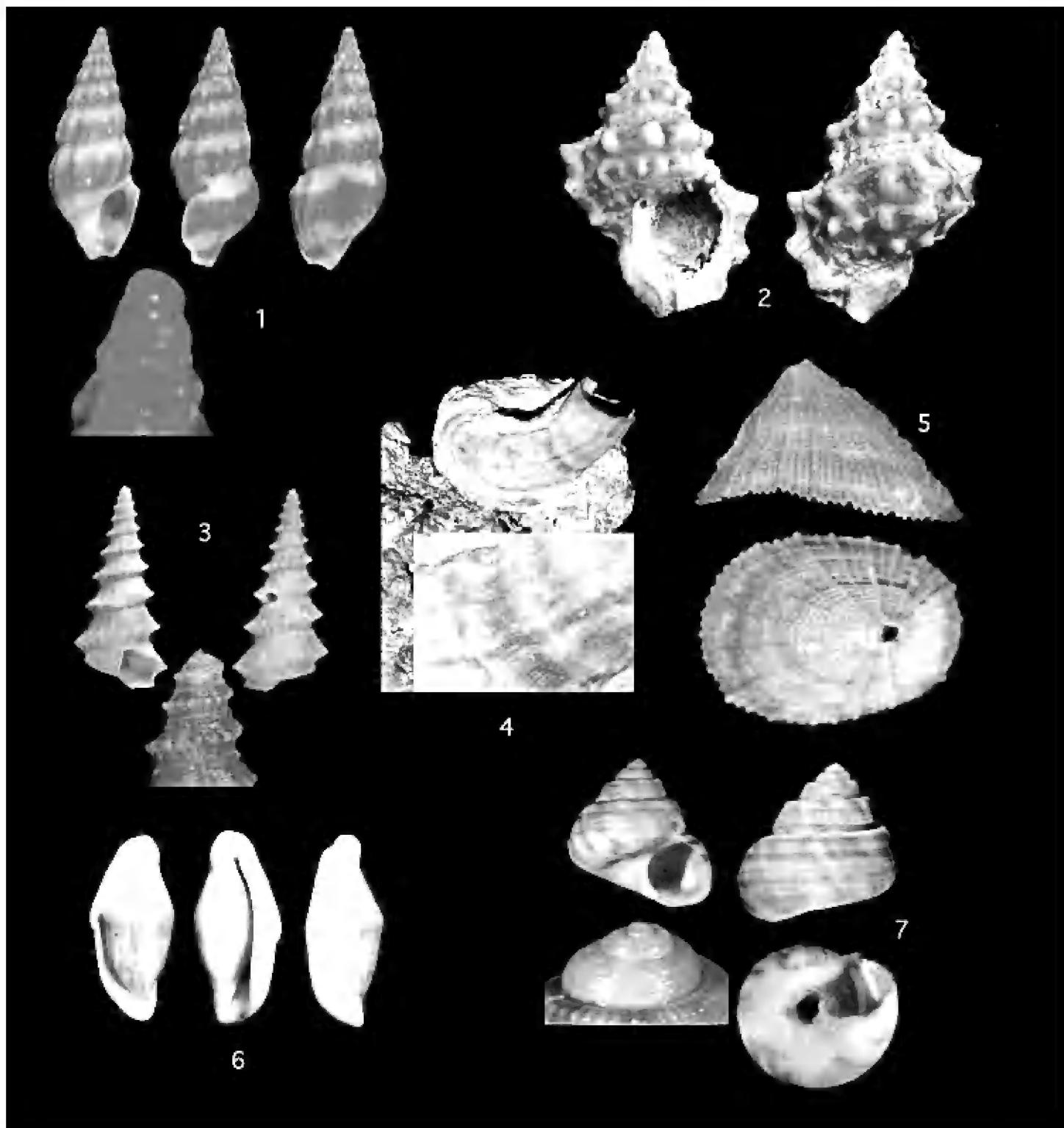


Plate I: 1. *Fenimorea petitii* Tippett, 1995, 28°05.019'N, 91°01.067'W to 28°05.047'N, 91°00.578'W, in 80m in fine rubble, 12mm. 2. *Bursa ranelloides* Dautzenberg & Fischer, 1906, 27°58.594'N, 91°39.768'W to 27°58.511'N, 91°39.744'W, 68m, medium rubble, 43.8mm. 3. *Mathilda* sp. aff. *hendersoni* Dall, 1927, 27°58.594'N, 91°39.768'W to 27°58.511'N, 91°39.744'W, 68m, medium rubble, 12.4mm. 4. *Thylacodes decussatus* (Gmelin, 1791) 28°05.212'N, 91°00.628'W to 28°05.328'N, 91°00.883'W, in 68m, fine rubble, diameter of opening 13.6mm. 5. *Diodora aguayoi* Pérez-Farfante, 1943, 28°05.068'N, 91°11.360'W to 28°04.754'N, 91°11.264'W, in 110m, packed mud, 17.1mm. 6. *Cyphoma* cf. *mccintyi* Pilsbry, 1939, 28°05.068'N, 91°11.360'W to 28°04.754'N, 91°11.264'W, in 110m, 19.9mm. 7. *Solariella multiresistis* Quinn, 1979, 27°53.560'N, 91°21.644'W to 27°53.405'N, 91°21.907'W, 150m, 10mm.

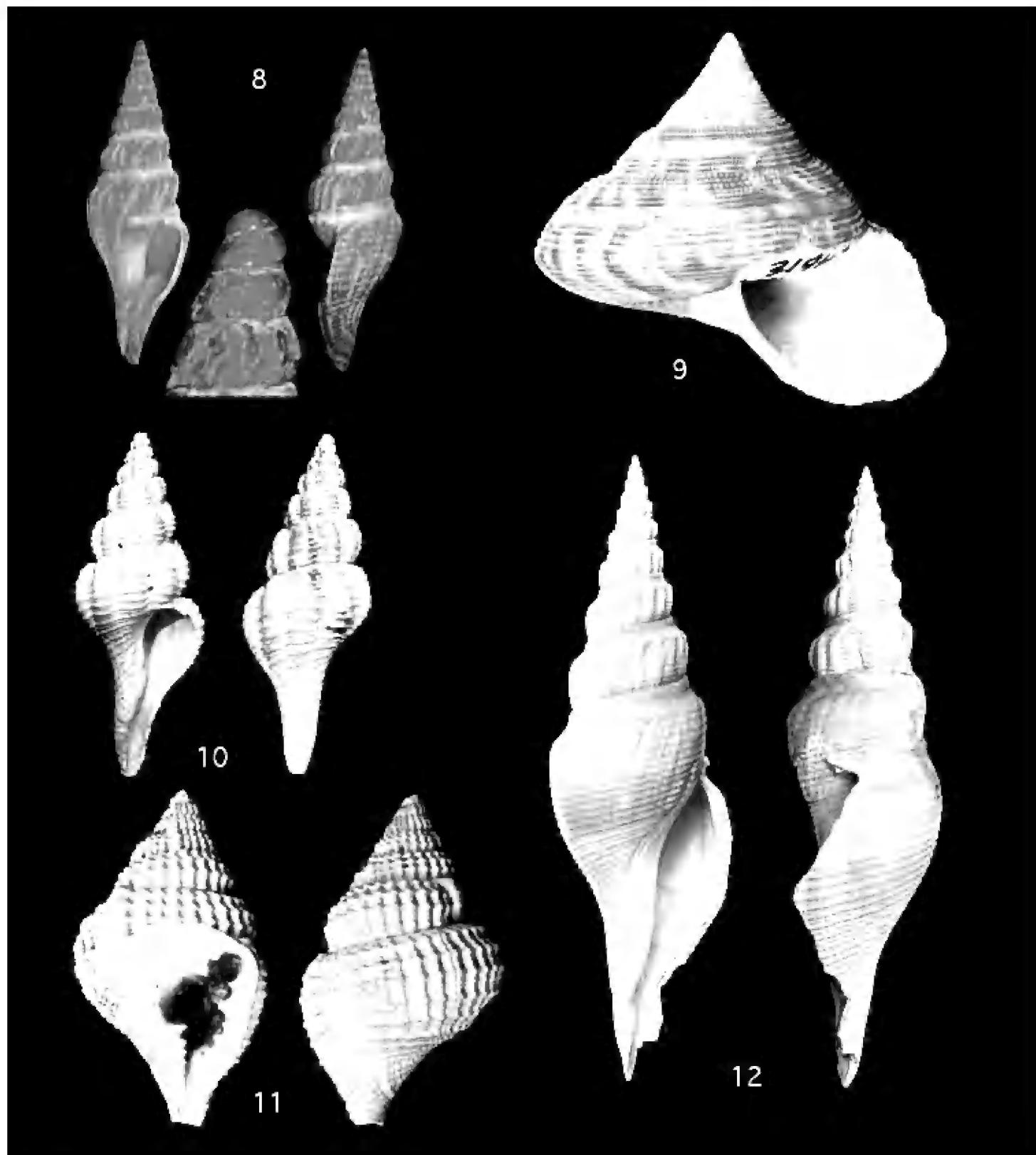


Plate II: 8. *Strictispira* sp.?, 27°53.560'N, 91°21.644'W to 27°53.405'N, 91°21.907'W, 150m, mud & shell fragments, 27.5mm. 9. *Perotrochus amabilis* (E. M. Bayer, 1963), 27°52.809'N, 91°21.048'W to 27°53.252'N, 91°20.973'W, 215m, 45.6mm. 10. *Fusinus aepynotus* Dall, 1889, 27°52.809'N, 91°21.048'W to 27°53.252'N, 91°20.973'W, 215m, 31.6mm. 11. *Personopsis grasi* (Bellardi in Ancona, 1872), 27°52.809'N, 91°21.048'W to 27°53.252'N, 91°20.973'W, 215m, 25.7mm. 12. *Bathyferula* cf. *delannoyei* Stahlschmidt, Lamy & Fraussen, 2012, 27°52.809'N, 91°21.048'W to 27°53.252'N, 91°20.973'W, 215m, 70.4mm.

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## COA *Neptunea* Award

Dear Members,

Many of us are beginning to plan for the 2019 COA Convention in Captiva, Fl. One of the many events on the agenda will be the annual COA *Neptunea* Award(s), and it is my privilege at this time to call for nominations. It is never to early to submit your nomination. Early convention in 2019 means early submissions are needed.

The consensus of the COA Board is to reopen nominations with a “clean slate” annually. **Nominees not selected in previous years are certainly welcome for consideration if renominated - in fact their renomination is encouraged.** For the present cycle, nominations will close on April 15,, 2019 so as to allow ample time for deliberation before the convention. Please note that members of the Board of Directors are not eligible to receive the *Neptunea* Award while actively serving on the Board. Also, your nominee must be a member of COA.

By way of background, the *Neptunea* Award (Brunner, 2000; Lipe, 2000) was established at the midyear (1999-2000) meeting of the COA Board in order to recognize outstanding and distinguished service to conchologists and malacologists in recognition of:

1. Service to the Conchologists of America. AND/OR 2. Service to the scientific interests of Conchologists of America. AND/OR 3. Service to the science of Malacology as it applies to conchologists anywhere.

Although notable exceptions have been made, the COA Board, which serves as the jury for the *Neptunea* Award, has traditionally weighed its consideration for award recipients toward (1) amateurs: those not currently pursuing a principal career involving collection, study, or commerce of mollusks, (2) individuals “working behind the scenes” and relatively unrecognized in the COA world, for their contributions, and (3) active members of the COA. Up to three awards have been made at our annual conventions beginning with the Houston event in 2000 (see below). Nomination(s) for the *Neptunea* Award may be made by any COA member, and the format is simple:

Name of nominee:

This person deserves this award because (Here a somewhat detailed paragraph will suffice.)

..... Signed .....

and either snailmail or email that nomination to me, the COA *Neptunea* Award Coordinator:

Everett Long  
422 Shoreline Drive  
Swansboro, NC 28584-7204  
<nlong3@earthlink.net>

Previous *Neptunea* Award winners:

2000 (Houston, TX): Ross Gunderson, Ben and Josy Wiener, Debbie Wills  
2001 (Port Canaveral, FL): Emilio Garcia, Harry Lee, Lynn Scheu  
2002 (Sarasota, FL): Richard Petit, Bernard and Phyllis Pipher  
2003 (Tacoma, WA) Jim and Linda Brunner, Kevin Lamprell, Doris Underwood  
2004 (Tampa, FL): Bobbi Houchin  
2005 (Punta Rassa, FL): Richard Forbush, Anne Joffe, William Lyons  
2006 (Mobile, AL): Jack Lightbourn, Betty Lipe  
2007 (Portland, OR): none given  
2008 (San Antonio, TX): Bill Frank, Archie Jones

2009 (Clearwater, FL) none given  
2010 (Boston, MA): none given  
2011 (Port Canaveral, FL): Alan Gettleman  
2012 (Cherry Hill, NJ): Gary Rosenberg, Martin Avery Snyder  
2013 (Sarasota, FL): David and Lucille Green, Marlo Krisberg, and Charles Rawlings  
2014 (Wilmington, NC): Colin Redfern, Tom Rice  
2015 (Weston, FL) John and Cheryl Jacobs; Kevan and Linda Sunderland  
2016 (Chicago, IL) Rich Goldberg, Homer Rhode, Charlotte Thorpe,  
2017 (Key West, Fl) Robert ( Bob) Janowsky  
2018 (San Diego) Bruce Neville

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In Advance I thank you for taking time to submit your nominee for consideration.  
Everett Long  
Award Coordinator

# Book Review “Cowries...” in *American Conchologist*

## 46(2): 43 by Richard Kent

A response by Felix Lorenz

On reading Richard Kent’s detailed review of my Cowrie Book Volume 1 (2017), it becomes apparent that a lot of collectors would have preferred a smaller book with more pictures and less text, and in this particular case, an illustrated dealer’s price list.

Fair enough, but it was not my intention to write a best-seller, but a comprehensive treatise portraying where we stand in the research of cowries, from my “splitter” standpoint. The beauty of this standpoint is that now there is a lot of material on the table that we can discuss, dismiss, synonymize, and eventually drag back for discussion when new information becomes available or alternative views take over once again. The Introduction of Volume 1 goes into detail on this subject.

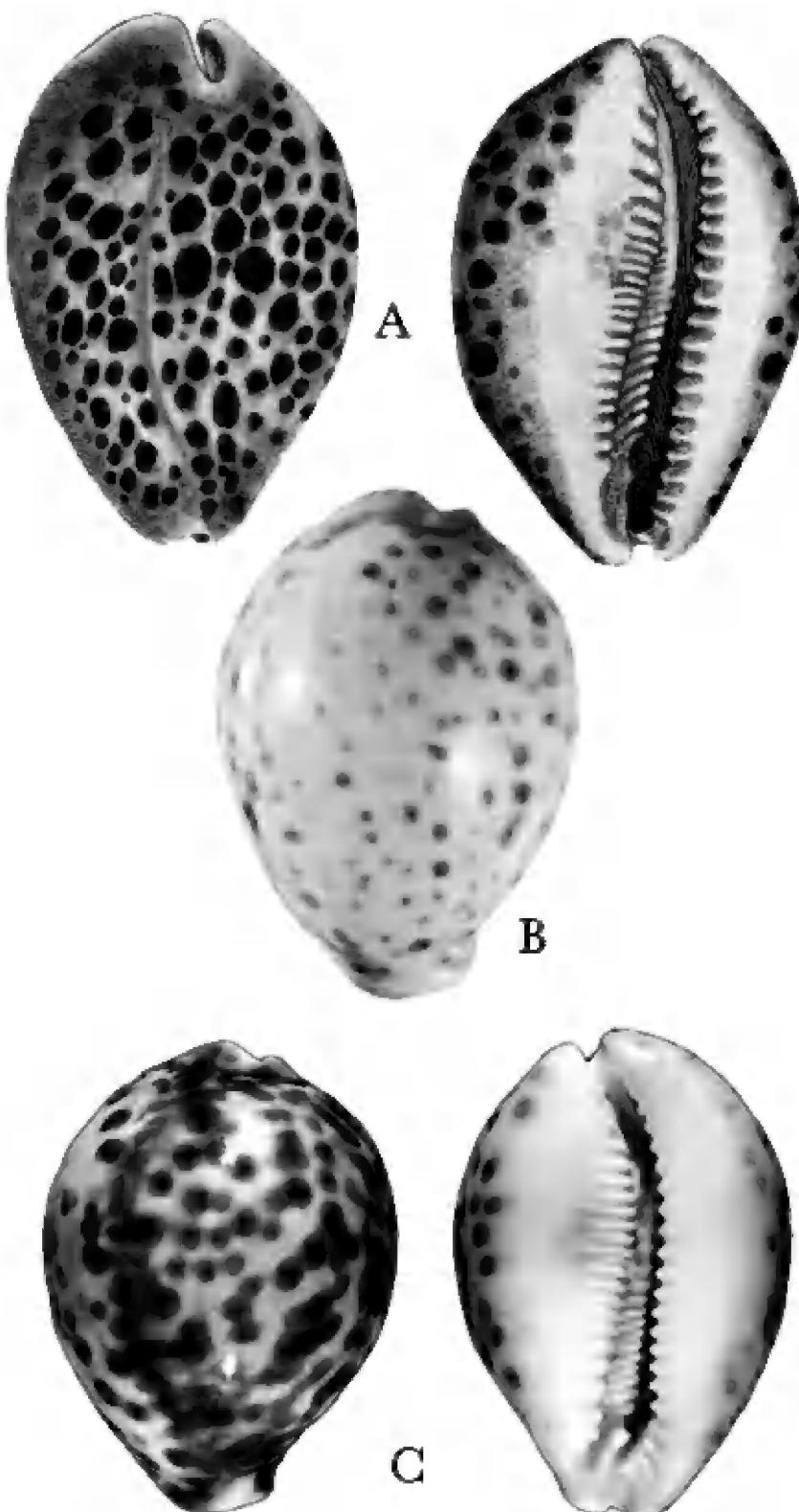
This is an ongoing process and also, this is what makes the whole issue so exciting. Therefore, I am taking this occasion to address a delicate subject that I am aware must have puzzled many collectors: the treatment of *tigris*. I do have my “favorites,” as Kent correctly noticed, and I had to cut back on them, simply because a lot of research on the four subspecies was published by Meyer and Tweedt (2017) and there were other groups that needed more attention.

The criticism concerning my treatment of *tigris pardalis*, therefore, is a welcome opportunity to briefly clarify my standpoints, or in other words, talk facts and correct some of the statements Kent made.

**Figure A:** The type figure of *pardalis* from Shaw (1794) (mirrored).

**Figure B:** The shell that is supposedly a typical *pardalis* depicted in Burgess (1970) pl. 22, fig. B, that Kent refers to.

**Figure C:** My interpretation of what a typical *pardalis* should look like (Cowries p. 283).



Kent quotes me as follows: “according to Lorenz... *Cypraea tigris pardalis* is the Philippine variety.” This is untrue. I never wrote, said, or thought that. What I did was simply use *pardalis* as the name for the Western to Central Pacific subspecies in general (in accordance with Schilder (1965) and all later authors, except Burgess, who incorrectly used *pardalis* as varietal name for very pale and sparsely spotted shells, in the case of his 1970 book for a shell from New Hebrides and not The Philippines (see Figure B).

Furthermore, Kent states: “...but he fails [sic!] to quote the original descriptions and type specimens to back this up.” Also this statement of his is simply untrue! As for all taxa, I do quote the original reference for *pardalis* and where its type figure can be found (see Figure A).

My approach is the same as in all monographs: if readers want to gain a deeper understanding of all the facts that led to the presentation of taxa, they will have to refer to the information offered, such as the original reference, further references on a particular subject (which are also listed in my book), and then do their homework by looking up the source itself, which is usually available online. In the case of *tigris* and *pardalis*, I did not have to “back up” my point any further, as my assignments of names agreed with those done by authors in the past, e.g. F. A. & M. Schilder (1952), Steadman & Cotton (1946), and C. N. Cate (1960).

Finally, Kent states: “Having dealt with shell dealers for years, *pardalis* is an all white tiger with minimal black spotting and no dorsal line, just like the one illustrated in the groundbreaking Burgess book.” Well, after dealing with shells and shell dealers for decades myself, I would never question their competence when it comes to interpreting names. Jokes aside: the original illustration of *pardalis* shows a shell that has dense, large spots and a distinct reddish dorsal line. The concept of the name is based on this picture. Neither “years of shell dealer’s experience,” nor the illustration in Burgess can alter these facts.

The molecular analysis is the modern approach to taxonomy and a universally accepted tool for differentiating between species. For the cowries, it was conducted by Dr. Christopher P. Meyer (2003, 2004, and numerous personal communications). His studies revealed that the populations of *tigris* from the Western to the Central Pacific should be distinguished from Indian Ocean ones on subspecific level, as they represent separate, evolutionary significant units. The same is true for the subspecies of *Zoila marginata*, and many other seemingly “polymorphic” species, to suggest for readers the interesting articles by Mr. Okon and Mr. Weir in the same issue of *American Conchologists*. In my Cowrie book, Volume 1, there is a long chapter on how molecular data can be aligned with traditional taxonomy, and I provide numerous examples.

In my discussion of the taxa of the *tigris*-group, I explicitly state that: “This variable and widespread species is split into four subspecies, of which three are supported genetically, but difficult to distinguish conchologically. The Indian Ocean is inhabited by the nominate *tigris*. Along the border between the Eastern Indian Ocean and the Pacific, interbreeding with the Pacific *pardalis* takes place. There is no way to safely distinguish shells from the Indian Ocean and the western Pacific....” And in another instance: “The individual variability of the tiger cowrie shell makes it impossible to determine features that safely distinguish individual specimens from the Indian Ocean and the Pacific. This characterization is based on comparisons of many specimens from different populations. The genetic distance between them is considerable, and the data suggests that *tigris* and *pardalis* split at approximately the same time that *pantherina* split from *tigris*.” I outline the general morphological trends that can be observed, however, even if they do not show up in every individual specimen (see table below).

Shaw’s name *pardalis* is the oldest available out of the long synonymy for *tigris* that most likely refers to a Pa-

<i>Cypraea</i>	<i>t. tigris</i>	<i>t. pardalis</i>	<i>t. lorenzi</i>	<i>t. schilderiana</i>
Distribution	Indian Ocean	Pacific except Marquesas and Hawaii	Marquesas	Hawaii
Shape	pyriform, slightly inflated	oval, depressed	pyriform, inflated	
Columellar teeth	rather long	rather short	short!	
Aperture	narrow	wider!	narrower	
Base	rather convex	concavely sloping at aperture!	rather convex	
Columellar ridge	less produced	slightly produced	well produced!	well produced
Fossula / denticles	steep / finer	less steep / coarser	sloping / coarse	less steep / coarser
Dorsal line	narrow, less distinct	broad, blurred	conspicuous, distinct!	
Spotting	small, dense	larger, dense	larger, confluent	large, distinct, framed with blue!

cific specimen, and its illustration supports this. As Schilder (1965) has comprehensively dealt with the assignment of type localities to existing names, I did not see the necessity to defend using *pardalis* for Pacific populations.

The shell I chose to represent the name is certainly more adequate than the pale off-color one shown by Burgess (actually, the varietal name *chionia* Melville, 1888, can be used for such shells). Whether or not other authors or collectors agree with my concept of distinguishing a subspecies that cannot always be reliably characterized by shell features, but merely by DNA, is a totally different question and not part of the taxonomical issues addressed herein.

Concluding, I encourage collectors to get your *tigris* (with ascertained data) out and make four piles: separate Indian Ocean ones from those from Hawaii, the Marquesas, and the rest of the Pacific. Then, study the sets side by side, ignoring their variability, but focussing on those morphological features compared in the table. You will find that there are differences between these four groups that may not be well displayed by some individual shells, but they do exist when the populations are examined as a whole.

Many thanks to Michael A. Mont for proofreading, and to Richard Kent for starting what can become a lively discussion.

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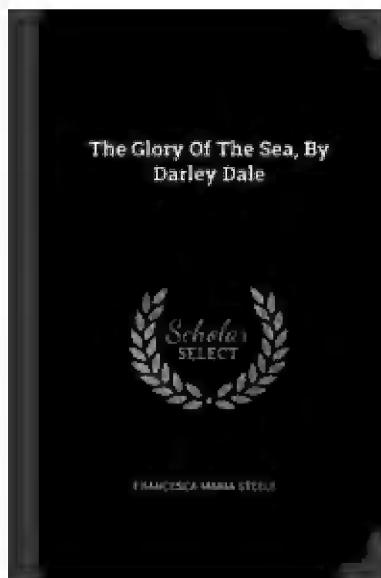
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**The Glory of the Sea**  
by Darley Dale [pseudonym for Francesca Maria Steele]  
1887 [reprinted 2015]  
Paperback, Nabu Press  
(December 8, 2013),  
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ISBN-13: 978-1293381113  
**Product Dimensions:**  
7.4 x 0.5 x 9.7 inches,  
228 pages

This is not your standard shell book, but it is a gem nonetheless. A few months ago a shell friend (Bruce Neville) emailed and said he had just reread *The Glory of the Sea* and quite enjoyed it. Having benefited from other recommendations from Bruce, I checked Amazon.com and sure enough, there it was, \$14.95 softcover. I did not know quite what to expect from an 1887 (approximately) novel about shells, but thought I could devote a couple hours to it at least. It was not what I expected.

The story revolves around a young 'crippled' girl named Polly. Her affliction is a curved spine and back then that meant spending most of the day and night, painfully chained, yes chained, to a bed to try and straighten the spine. In the first couple pages you learn that Polly has inherited a rather extensive shell collection from a Miss Crabbe. **Unknown** to Polly, Miss Crabbe's will stipulates that if Polly keeps the collection intact and actually adds at least 20 specimens by her 21st birthday, she will also inherit the old lady's fortune. If Polly sells off the collection, she gets £500.

The rest of the book involves Polly slowly gaining an appreciation for conchology as she learns about various shells and families of shells in the collection. Of course, this means you as the reader also get a shell education. You will be amazed at how much they got right 131 years ago. There are also some interesting errors. Thus you will find *Ianthina* used instead of *Janthina*, a common misspelling of Röding's original genus. The section on the golden cowrie is also interesting.

The title comes from a missing *Conus gloriamaris*, which at that time would have been a big deal as it was an almost priceless shell in the 1800s. To find out what happened to the pricey cone and indeed, to Polly, you will have to read the book, also available as a free pdf at Google books: [https://books.google.com/books?id=fWMUAAAAQAAJ&printsec=frontcover&source=gbs\\_ge\\_summary\\_r&cad=0#v=onepage&q&f=false](https://books.google.com/books?id=fWMUAAAAQAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false)

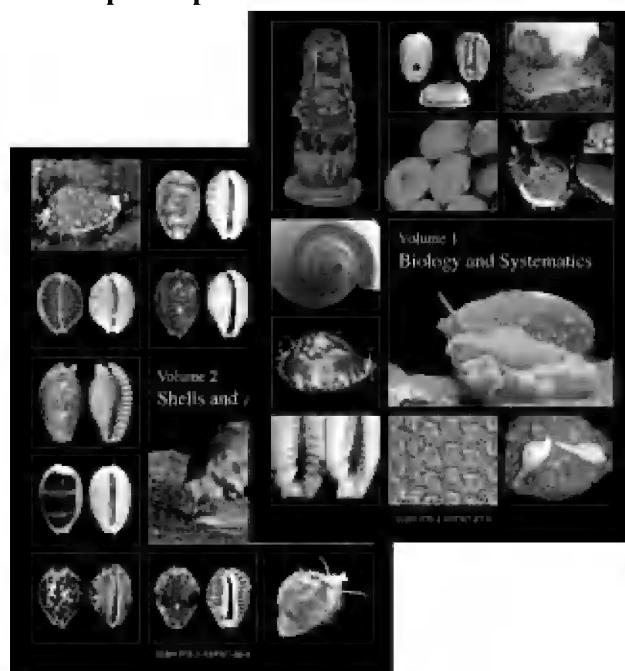
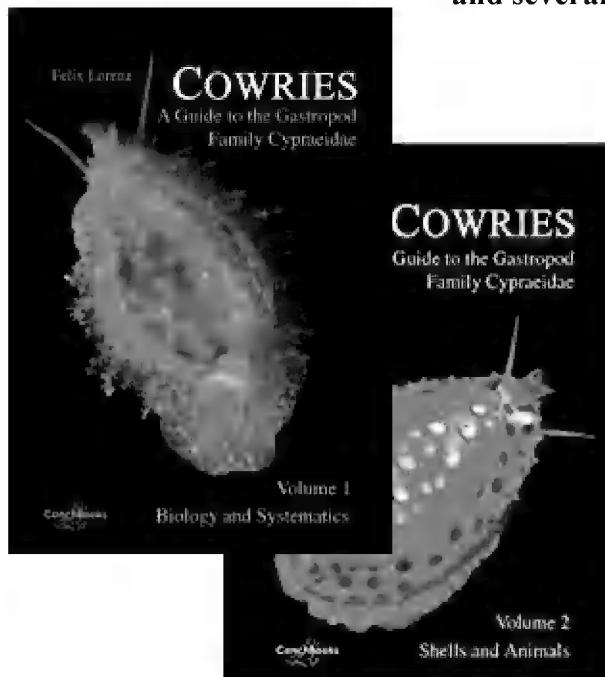
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# COWRIES: A Guide to the Gastropod Family Cypraeidae

By Felix Lorenz  
Published in two volumes

**Volume 1: ISBN 9783939767879** Published in 2017, ConchBooks, Harxheim, Germany, hardcover, 8 by 11.75 inches, 644 pages fully illustrated with color plates, maps and charts

**Volume 2: ISBN: 978-3-939767-88-6**, published in 2018, ConchBooks, Harxheim, Germany, hardcover, 8.25 by 11.75 inches, 715 pages including 345 pages of full sized, high quality photographic plates in color and several black and white photo plates



This two-volume set is the third book that Dr. Lorenz has written covering the cowrie shells, which far and away is the most popular group of shells for collectors. To simply say that these new books are a remarkable achievement does not even come close to giving these books the praise that they deserve. The books represent many years of research in the field and in the lab by the author and with the help and input from a host of worldwide cowrie enthusiasts, both amateur and professional malacologists. There are two questions that may come to your mind before you think of adding these books to your library, since they are rather expensive. You may wonder if you need them since you already own one of the two earlier editions of "A Guide to Worldwide Cowries" by Lorenz and Hubert that were published in 1993 and 2002. The answer here is an unequivocal "yes." The new books go into far greater detail than the earlier works and also introduce some important modifications to the systematics of these mollusks. The second consideration may be, do I want both volumes or will volume 1, which covers the biology and systematics of the family suffice? Here things become a bit more problematic. Volume 1 thoroughly covers the biology and the systematics of the

family. This can serve as a complete work on the cowries. It contains descriptive material, distribution maps, charts and tables, and photographs of specimens that best represent each of the species and subspecies of these shells. The second volume is a photographic iconography of the shells. In this book you can see figured many shells of each of the taxa which can be compared to one another and to other shells that appear almost similar to one another but which are assigned to separate classifications. For many collectors this volume will be the first one that they turn to help classify their specimens. Both of the books cover a limited number of fossil cowries and the first volume has a chapter by Dr. Christopher Meyer on the DNA and the molecular structure of cowrie shells.

These books can be purchased from ConchBooks in Germany for about 175 Euros plus shipping for each volume and from MdM Shell Books in the USA for \$199.95 plus shipping for each volume. Each volume can be purchased separately and these books will stand for a very long time as the "last word" on the cowrie shells.

Review by Bob Janowsky  
mail@mdmbooks.com

# The Seychelles: Our amazing Indian Ocean adventure

Amelia Ann Dick

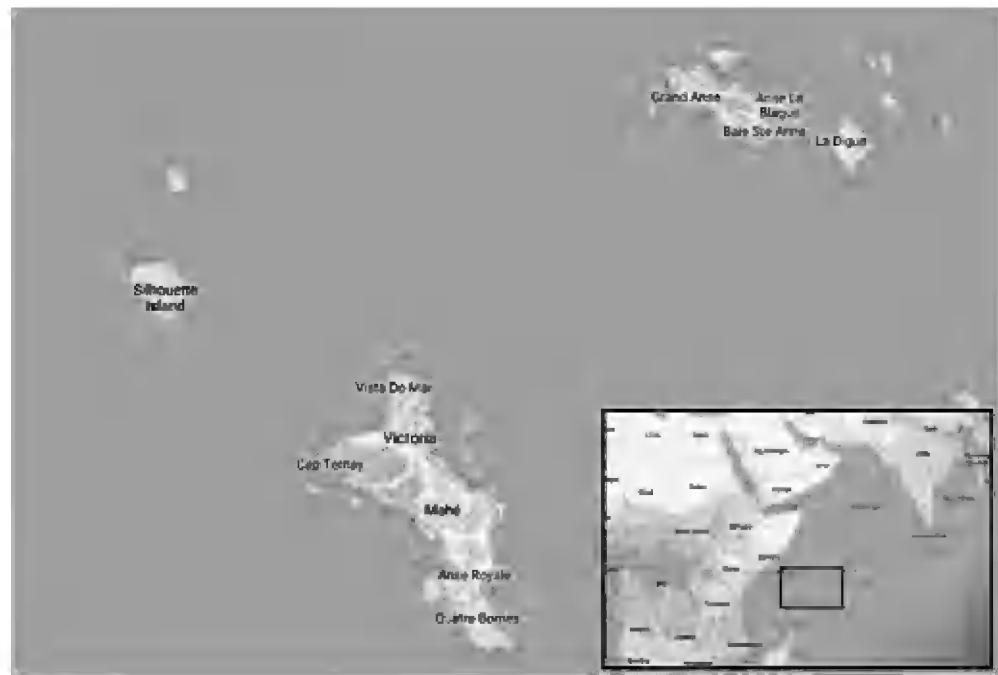
February 19, 2017: Victoria, Mahé, Seychelles

My overwhelming desire to visit Seychelles became a reality on February 19, 2017. My husband and I boarded an Emirates plane from Dubai, U.A.E., to Victoria, Mahé, Seychelles, in the Indian Ocean. After a 4+ hour flight, we arrived, went through Customs, and were transported to the Eden Blu Hotel on Eden Island. We were escorted a short walking distance away to the Eden Island Marina and embarked the *Crystal Esprit*. The *Crystal Esprit* is a small luxury ship catering to adventure seeking travelers. She has 31 suites which equates to a maximum capacity of 62 guests. Unlike other cruise ships requiring large ports, the *Crystal Esprit* offers an incredible cruising experience with the capability of accessing hard to get to bays, coves, and uninhabited islands. This advantage rewards her guests with the bonus of exclusivity, allowing one to truly experience nature first hand, uncompromised and uninterrupted. A list of species that were self-collected and those that were purchased from a fisherman are included at the end of the article.

First, a brief geological history lesson. The Seychelles are an exotic and remote archipelago located some 1,000 miles off the coast of Kenya, Africa. The Seychelles' uniqueness began approximately 66 million years ago when a part of the granitic Mascarene Plateau broke off from the Indian Plate. Out of the 115 islands comprising the Seychelles Archipelago only 45 are granitic. They are referred to as the Inner Islands and consist of the major islands of Mahé, Praslin, LaDigue, and Silhouette. This is the area we cruised. The remaining islands in the archipelago are coralline in nature and are referred to as the Outer Islands. The Inner Island group of Seychelles are the world's only oceanic islands of granite rock.

## February 20, 2017 / Moyenne Island off St. Anne Island

After breakfast, we traveled to Moyenne Island, off St. Anne Island. Our zodiac made a beach landing and we were dropped off at what actually was a sand bar at low tide to swim and snorkel. We snorkeled for a short while but



The larger of the 115 islands that comprise the Seychelles.

soon concentrated our shelling efforts on that temporary tiny strip of sand. We did find some nice shells in good condition interspersed amongst sea weed. There was an assortment of very nice gastropod and bivalve species with a few of the bivalves having washed up with both valves intact. After two hours we were picked up by zodiac and transported back to the *Crystal Esprit*. That afternoon we cruised to our second day's destination and prepared for a very tropical, humid walking tour, with a warning to apply huge amounts of mosquito spray.

## February 20, 2017 / Cousin Island Special Reserve

This tour offered an amazing opportunity for discovery, education, and adventure. Cousin Island is uninhabited except for the few people who live there to protect the welfare of the island and care for animals when necessary. Also, they are invaluable guides who intimately know and understand the rhythm and needs of this special place.

Seychelles is big on birds and this is one of the best islands to see these beautiful creatures in a natural environment and who have no fear of humans. Our guide explained the uniqueness of several. Fairy terns don't make nests. They lay their egg(s) on "forked" tree branches and limbs of trees. We saw many white-tailed tropicbirds and learned that they lay their egg(s) in nests on the ground against the



**Fig. 1 A nesting white-tailed tropicbird on Cousin Island Special Reserve, doing a great job of ignoring the small group of people taking pictures.**

bases of trees. Even though our group was within 1-2 feet of the parent, it remained still, quiet, and obviously content. With the help of the guide we were able to see a juvenile bird underneath a nesting parent. A pretty white ball of fuzz and fluff. We observed the endemic Seychelles magpie and saw wild lavender orchids along with many large terrestrial hermit crabs flaunting some pretty nice gastropods on their backs. We witnessed a female loggerhead turtle making her way up the beach to dig a nest to lay her eggs. The most thrilling event of the afternoon, however, was being greeted by one of the Aldabra giant tortoises. The most famous and friendly is a very old fellow named "George." He is social and inquisitive, and enjoys interacting with people. He followed us around like a dog for a short time on the beach. I sat down on a cinder block to pet his head and he "came in for a closer look" nearly knocking me off of my perch. I was wearing a bright multi-colored green top that day and my husband said he must have thought I was a big salad. "George" always seemed to have a smile on his face which makes him the most wonderful animal ambassador I have ever met.

#### February 21, 2017 / Anse Lazio Beach, Praslin Island

Mid-morning, we take a tender ride to a pier on Praslin and are lucky to see a green-backed heron. It was taking advantage of a fish feeding opportunity offered by a visitor throwing potato chips in the water. We boarded our tour bus traveling over the mountainous interior and arrived at Anse Lazio Beach. Unfortunately, it was not a good snorkeling day. The sky was overcast and the waves rough and crashing over the smooth orange colored granite boulders dotting the shoreline. After successfully beachcombing for shells, we wandered toward those granite pinnacles in hopes of finding something pretty. We weren't disappointed.



**Fig. 2 A watchful but unafraid fairy tern nesting on a broken branch, Cousin Island Special Reserve.**

Right before our eyes clinging to the rock surface, we found nerites, monodonts, periwinkles, limpets, and chitons. We were also surprised to see skipper fish jumping from rock to rock as we approached. A first for us. I also found a nice collection of sea glass treasure. Our time passed by very quickly. After nearly four hours of sheer bliss, including taking some time out to lie underneath a palm tree, we boarded our bus back to the pier and transferred to the *Crystal Esprit*.

#### February 22, 2017 Coco Island and Félicité Island, off LaPasse, LaDigue

This afternoon we boarded a private tour boat which took us snorkeling off Coco Island and Félicité Island. Again, the water was rough. We jumped in and slowly snorkeled to Coco Island. It is sad to say how much broken dead coral littered the bottom here. Every now and then we saw a few extremely small healthy colorful corals, but they were few and far between. The water was filled with beautiful tropical fish species such as powderblue surgeonfish, convict



**Fig. 3** Granitic boulders, Coco Island, off La Passe, La Digue, Seychelles – one of the four larger inner islands.



**Fig. 4** The giant spider conch, *Lambis truncata*, displaying vivid colors only seen with the living animal. There are now three accepted subspecies of *Lambis truncata*.

tangs, parrotfish, and the extravagant Picasso fish to name a few. The needle-spine urchins had colonized the bottom. I saw a trumpetfish for the first time. The tiny island is very picturesque with a beautiful assortment of granitic monoliths and palms. We did collect serpent-head cowries with worn lavender dorsa. Most shells were pretty banged up. After a while, we snorkeled back to the boat, which took us to Félicité Island. Here, again, we are greeted by a very tiny beach, rough waves, and slim pickings. I did find a few shells, sea glass, and some very small attractive pieces of dead coral. I was more determined for better results on the following day.

#### February 23, 2017 / Laraie Bay, Curieuse Island

The weather greatly improved overnight and we had sunny skies and calm water. Once again, the zodiac maneuvered a successful beach landing, right onto Laraie Beach. This is an amazingly beautiful destination. Once on shore, we donned our snorkeling gear and immersed ourselves in tranquil blue water. We found lollyfish and greenfish hiding in sea grass. Very peculiar creatures. We see many of the fish species we did the day before and add the scissortail sergeant fish to the list, along with squirmly red needle-spine brittlestars under rocks. As a person concerned with water quality, I am happy to say that this location has a huge diversification of healthy sea grasses. In most places, much of the bottom was so heavily covered it looked like an underwater forest. There were myriad shades of green. The most stunning was a spectacular bright emerald green. Healthy sea grasses serve as safe havens for sea life and also as nurseries for young, providing hiding places from possible predators. I found several cone and cowrie species amongst scattered

rocks and coral in less than 6 feet of water. The most wonderful surprise of the day, however, were the four giant spider conchs we discovered in less than 10 feet of water. We admired and played with the most beautiful one, bringing it up to the surface for photographs. I had no idea this species could possess such a rich and vibrant color palette consisting of burgundy and gold. This was the first live specimen I had ever seen. The giant spider conch shell will lose its beautiful colors very quickly within a matter of days once taken. This explains why the specimens you see on dealer's tables at shows are pale and off-white in color. After enjoying our spectacular find, we returned it to its watery home.

After a few hours in the water, I walked a small portion of that gorgeous beach with those tall, smooth granite boulders at the shoreline. It is here that I left some of my mother's ashes. She traveled extensively during her lifetime and would be very happy knowing she still continues to fly jets around the world visiting some of the loveliest places on Earth.

Back on board, the thrills continued as we had tickets to board the *Genting Explorer*, *Crystal Esprit*'s underwater submersible. She is truly a sight to behold, painted a shiny bright red. She carries two guests and a captain. It was such a thrill to be inside that large glass bubble looking out at the seascape underneath the waves. I have never seen such large schools of fish as I did that afternoon. A symphony of synchronized swimmers suddenly moving from one direction to another like characters in a well-rehearsed choreographed underwater ballet. We also had a very close encounter with a curious star pufferfish which swam right in front of the glass taking a closer look at us. Just as soon as we got relaxed staring out at the view, our 20 minutes were up – and so were we, breaking topside. A truly exciting and



**Fig. 5** We pose for a quick photo in front of the submersible, *Genting Explorer* on board *Crystal Esprit*, off Cu-rieuse Island, Seychelles. The submersible had room for only two plus the pilot - it was a grand adventure.



**Fig. 6** A terrestrial hermit crab in its turban shell quarters (a bit of a tight fit). We ran into this critter on Aride Island National Park, Seychelles.

memorable day to say the least.

#### February 24, 2017 / Aride Island National Park

In the morning we were swiftly transported by zodiac to the shore of Aride Island. As with Cousin Island, Aride is protected and overseen by a few souls who live there to protect this natural resource and treasure. We met our knowledgeable guide who took us hiking up a mountain. While on our way we saw some fascinating creatures, some endemic to the Seychelles. We found the Seychelles land crab, Wright's skink and brown noddy bird. The guide also pointed out a beautiful tree in full bloom. The flowers of this tree reminded me of the flower of the mimosa tree. The flower is fragrant, with numerous, showy, soft, long, white needle-like spikes with pink colored tips, but this is where the similarities quickly end. He told us the name of the tree is the "fish poison tree" and it comes from Asia. He says all parts of the tree are poisonous. The seeds are ground into a powder and used to stun or kill fish, leaving the flesh of the fish unaffected. The seeds are capable of traveling ocean currents and can survive up to 15 years adrift. Amazing! Shortly after, we began our ascent to the top. The uneven dirt trail was slick from rain the day before. Everyone carefully watched the placement of each footstep. A couple of guests carried heavy camera equipment with large zoom lenses. Their climb up was much more difficult as they only had one free hand to help them access a tree limb or a sturdy rock to help with balance. Along the way our guide picks up a giant millipede for us to see and we encounter numerous damselflies and butterflies. There were many white-tailed tropicbirds sitting on nests. Eventually, everyone successfully maneuvered the climb and we were rewarded with a

most stunning view. As we had accomplished our goal, we were happy in the knowledge of knowing that it is harder going up than it is going down. After our descent to level ground we were once again back on the beach. We found limpets and eroded lavender capped serpent-head cowries. Not much in the way of shells, but the natural beauty of this pristine place made up for that. We boarded the zodiac back to the ship, had lunch and prepared for our afternoon adventure.

#### February 24, 2017 / Grand Soeur Island (Big Sister Island), Coco Anse, Coco Bay

Big Sister Island is a private island with a total population of 2 permanent inhabitants. We wish we knew them! The ocean side has a gorgeous beach, tall palms, large granite boulders, and teal/turquoise water. It is considered to be one of the most beautiful beaches in the world and is seen in many travel photographic layouts depicting the Seychelles. We concentrated our time snorkeling on the opposite side in Coco Bay. The day was perfect with sunny skies and light breezes. This is an incredible island to visit, with permission, which offers many exciting snorkeling opportunities. In addition to the tropical fish species already mentioned, we can add sightings of batfish and Moorish idols. Coral is prolific and seems to be thriving along with needle-spine urchins. We turned over many rocks looking for shells. Again, we found red needle-spine brittlestars as well as serpent-head cowries which were plentiful. We also found gold-ringer cowries and money cowries, the latter in both smooth and knobby forms, and a pretty *caurica* cowrie with a bluish tint. All of these shells were found in less than six feet of water under and between rocks and coral. All



**Fig. 7 Buying shells in the open air Sir Selwyn-Clarke Market in Victoria.**

rocks were returned to the position in which initially found. Incredibly, to my complete amazement, while snorkeling in the surf at the shoreline, I found two vermiculate cones and three Hebrew cones. All were clinging to a smooth granite bottom. If I had been walking the shoreline, I probably would have stepped on them. We came ashore and did some beachcombing. Didn't find much in the way of shells, however, we were rewarded with some very pretty coral fragments and sea glass before jumping into a zodiac and returning to the *Crystal Esprit*. This was the last water day on the trip.

#### February 25, 2017 / Victoria, Mahé Island

This morning, our tour begins with a stop at the largest open-air market in Victoria, named Sir Selwyn-Clarke Market. It was Saturday – the busiest shopping day of the week. We stepped inside and encountered an amazing variety and selection of fish, octopuses, fruits, vegetables, spices, and, of course, souvenirs. I asked our tour guide if she knew of anyone who sold shells. She said “Yes, follow me.” I was introduced to a fisherman who had a large selection of cleaned shells for sale. I had twenty minutes and made quick work out of the assortment he placed in front of me. After I had chosen the thirty-two shells I wanted, he wrapped them for me, wrote up a paper receipt and quoted me the price he wanted which was in rupees. We converted the rupees into American dollars. The price was extremely modest. I paid him and then he picked out a few more shells he wanted me

to have and gave them to me. He, I am sure, was happy I came that day and I was even happier!

Next, we traveled up a steep mountain road to see the ruins of what was originally named “Venn’s Town.” Today it is known as the “Mission.” It was a boarding school founded in 1875 by the Rev. William Chancellor, to care for and educate children of freed slaves. There is a very commanding view from the top offering scenic views of the island and the Indian Ocean. It is here we saw tea plants and smelled the bark of cinnamon trees.

Our last stop is the Seychelles Botanical Gardens. It is one of the oldest national monuments in the Seychelles, dating back more than a century. It is filled with an assortment of established plantings set in natural landscapes with many specimens being endemic to Seychelles, such as the coco de mer, whose seed is the largest in the plant world.

On very tall trees we saw the Seychelles fruit bat hanging upside down. It was a perfect photo opportunity for the flower enthusiast with most plants being in bloom. It wasn't long before I spied a few visitors that are not welcome in such a lovely floral setting. Giant African snails, *Achatina immaculata*, were happily plying their way through ground foliage. Big rascals! Soon, we entered an enclosure with several Aldabra giant tortoises. The staff handed us several long-stemmed leaves so we could feed them. I didn't know I was in for another surprise. I turned my head and saw a juvenile *A. immaculata* hitching a ride on the back of one of the tortoises. I quickly plucked it off and wrapped it in a paper towel. It resides in my collection accompanied by this very funny story. Soon, we met up with our tour guide and returned back to the *Crystal Esprit*.

The next day, we said good-bye and disembarked the luxurious *Crystal Esprit*. We checked into the Eden Blu Hotel on Eden Island for the day until our Emirates flight departed later that evening for Dubai, U.A.E. Our Seychelles Indian Ocean adventure was inspiring, rewarding and more than we had hoped for. A paradise found and a naturalist's dream come true.

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**SPECIES SELF-COLLECTED IN SEYCHELLES:***Anodontia edentula* (Linnaeus, 1758)*Monetaria annulus* (Linnaeus, 1758)*Barbatia candida* (Helbling, 1779)*Monetaria caputserpentis* (Linnaeus, 1758)*Canarium mutabile* (Swainson, 1821)*Monetaria moneta* (Linnaeus, 1758)*Cardita variegata* Bruguière, 1792*Modiolus auriculatus* (Krauss, 1848)*Cellana radiata* (Born, 1778)*Morula uva* (Röding, 1758)*Codakia tigerina* (Linnaeus, 1758)*Nassarius arcularia plicatus* (Röding, 1798)*Conus (Pionoconus) catus* Hwass in Bruguière, 1792*Nassarius conoidalis* (Deshayes, 1832)*Conus (Virroconus) chaldaeus* (Röding, 1798)*Neocancilla clathrus* (Gmelin, 1791)*Conus (Virroconus) ebraeus* Linnaeus, 1758*Nerita (Theliostyla) albicilla* Linnaeus, 1758*Diodora singaporesis* (Reeve, 1850)*Nerita (Ritena) plicata* Linnaeus, 1758*Divaricella chavani* Cosel, 2006*Palmadusta asellus* (Linnaeus, 1758)*Donax cuneatus* Linnaeus, 1758*Phasianella solida* (Born, 1778)*Drupa morum* Roding, 1798*Phenacolepas asperulata* A. Adams, 1858*Drupa ricinus* (Linnaeus, 1758)*Ramularia gallinago* (Reeve, 1844)*Naria helvola* (Linnaeus, 1758)*Scissulina dispar* (Conrad, 1837)*Erronea caurica dracaena* (Born, 1778)*Siphonaria atra* Quoy & Gaimard, 1833*Gafrarium dispar* (Holten, 1802)*Tonna canaliculata* (Linnaeus, 1758)*Littoraria coccinea glabrata* (Philippi, 1846)*Stomatella orbiculata* A. Adams, 1850*Littoraria scabra* (Linnaeus, 1758)*Trochus maculatus* Linnaeus, 1758*Vanikoro cancellata* (Lamarck, 1822)*Vasticardium flavum* (Linnaeus, 1758)*Monodonta australis* (Lamarck, 1822)*Scutellastra exusta* (Reeve, 1854)*Nerita (Linnerita) polita* Linnaeus, 1758*Terebralia palustris* (Linnaeus, 1767)*Stomatia irisata* (Dufo, 1840)**SPECIES PURCHASED AT MARKET***Atrina vexillum* (Born, 1778)*Lambis truncata* ([Lightfoot], 1786)*Canarium erythrinum* (Dillwyn, 1817)*Latirolagena smaragdulus* (Linnaeus, 1758)*Colubraria muricata* (Lightfoot, 1786)*Mancinella tuberosa* (Röding, 1798)*Conus (Dendroconus) betulinus* Linnaeus, 1758*Mancinella alouina* (Röding, 1798)*Conus (Gastridium) obscurus* Sowerby I, 1833*Mauritia histrio* (Gmelin, 1791)*Conus (Harmoniconus) musicus* Hwass in Bruguière, 1792*Conus (Pionoconus) striatus* (Linnaeus, 1758)*Mimachlamys sanguinea* (Linnaeus, 1758)*Conus (Virgiconus) virgo* Linnaeus, 1758*Minnivola pyxidata* (Born, 1778)*Cypraea tigris* Linnaeus, 1758*Phalium fimbria* (Gmelin, 1791)*Filifusus filamentosus* (Röding, 1798)*Pinctada margaritifera* (Linnaeus, 1758)*Harpago arthriticus* (Röding, 1798)*Polinices mammilla* (Linnaeus, 1758)*Hemifusus ternatanus* (Gmelin, 1791)*Turbo argyrostomus* Linneaus, 1758



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We also want to highlight the continuing support of our donation program by two shell clubs, the Sanibel-Captiva Shell Club and the Central Penn Shell Club, and two very significant personal donations by Anne Joffe and the D. Dan Charitable Trust, for which we are most grateful. For these latter donations, we have established two new named academic grants, the Anne Joffe Award and the Toto Olivera & Donald Dan Award.

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# *Lahillia larseni*: Survivor of the Cretaceous-Paleogene Extinction

Rachel Mohr

## Historical Background and Introduction

In 1892, Captain Larsen of the Swedish South Polar Expedition found a fossil bivalve on Seymour Island, on the northeastern tip of the Antarctic Peninsula (Zinsmeister, 1988). Later identified as *Lahillia larseni* (Sharmann and Newton, 1898), this was one of the first fossils ever collected from Antarctica. The significance of this bivalve species would not be fully realized until more than 100 years later, when more thorough paleontological investigations of Seymour Island would reveal that *L. larseni* was one of the few mollusks at this location to survive the Cretaceous-Paleogene (K-Pg) extinction event 66 million years ago (Zinsmeister and Macellari, 1988). Although the K-Pg extinction is best known for its role in the demise of the dinosaurs, it was also responsible for the disappearance of many important mollusk groups, including the ammonites and the rudist and inoceramid bivalves (Schulte et al., 2010). *L. larseni*, however, not only survived the K-Pg extinction, but was also extremely abundant and successful during this time. Fossil shells of *L. larseni* collected from Seymour Island can be used to reconstruct the life histories of these bivalves and the environmental changes they experienced across this extinction interval.

### Living on the Edge

The now-extinct *L. larseni* survived and thrived in a relatively stressful and unstable marine environment during the latest Cretaceous and early Paleogene. *L. larseni* lived at high southern latitudes that are characterized by seasonal extremes in sunlight availability, limiting primary productivity mostly to the austral summer. Additionally, recent studies suggest that this location was subject to frequent intervals of oxygen-deprived waters enriched with toxic hydrogen sulfide (Schoepfer et al., 2017). Rapid climate change across the K-Pg interval may have also been a significant environmental stressor in this location.

### Stable Oxygen and Carbon Isotopes in Bivalve Shells

Like other bivalves, *L. larseni* grew an accretionary carbonate shell that precipitated in chemical equilibrium

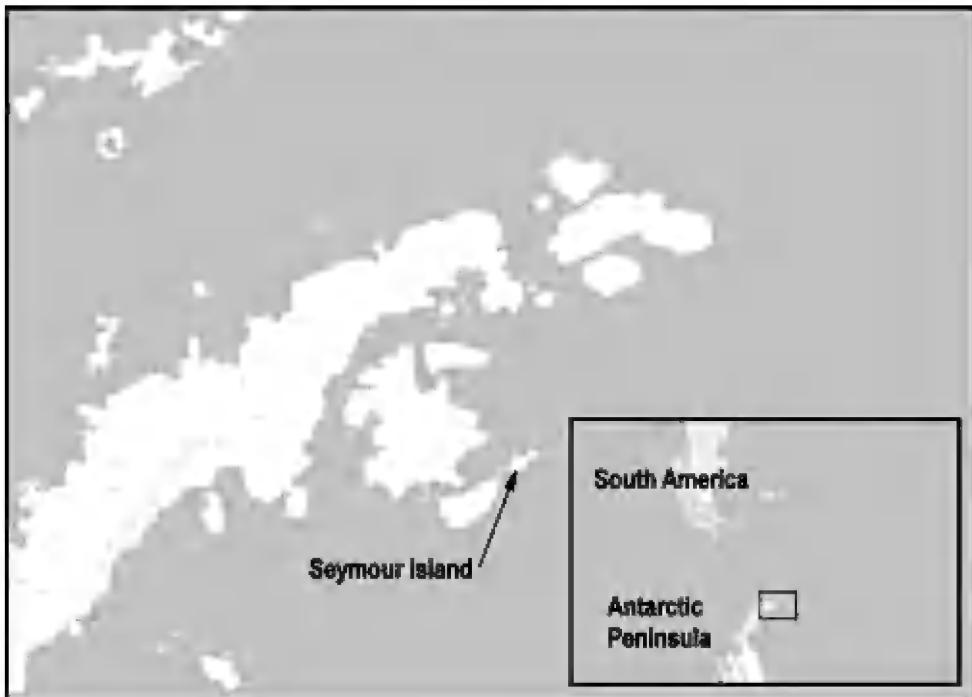
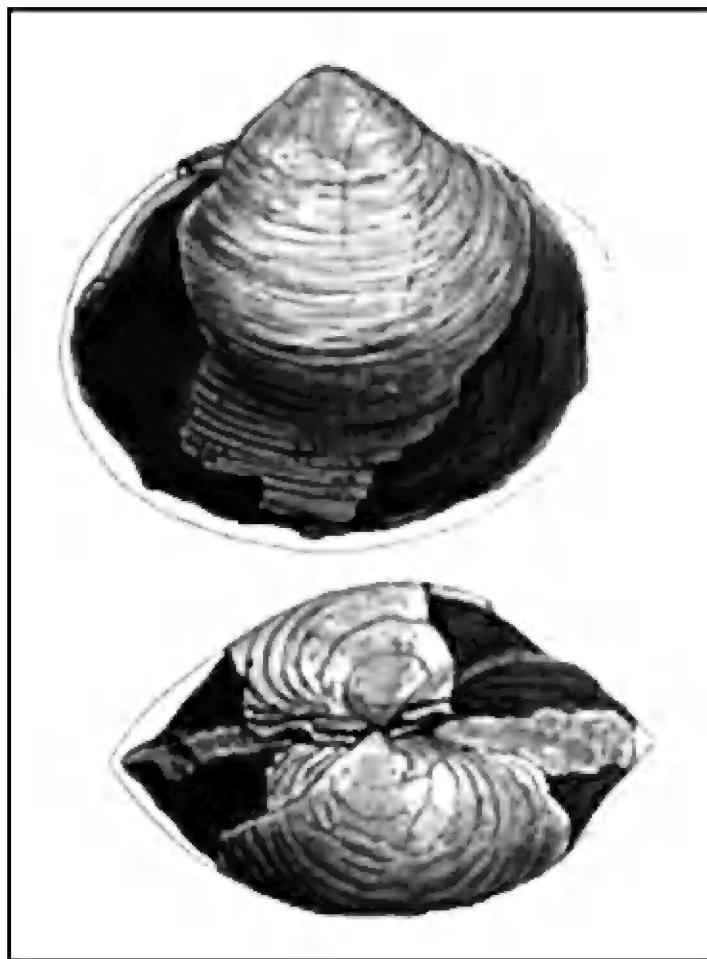


Fig. 1: Map indicating the location of Seymour Island, Antarctica.

with the surrounding seawater. Ontogenetic stable oxygen and carbon isotope ( $\delta^{18}\text{O}$  and  $\delta^{13}\text{C}$ ) sampling of these shells can provide sub-annual records of environmental conditions when the bivalves were alive and can provide a window into the life histories of these bivalves. Stable oxygen isotopes in these shells can be used to reconstruct seawater temperatures, determine the preferred season of shell growth, and confirm whether growth bands represent annual intervals. Stable carbon isotopes are significantly more complex but provide a variety of opportunities to investigate environmental conditions such as levels of primary productivity or terrestrial inputs of organic material, or life history variables such as rates of metabolism or reproductive behaviors.

As part of my master's thesis research at the University of Alabama, I have isotopically sampled 20 shells of *L. larseni* from across the K-Pg interval (Figure 3). Figure 4 shows the high-resolution sampling strategy used to collect carbonate powder for isotopic analysis. For each specimen, ontogenetic  $\delta^{18}\text{O}$  and  $\delta^{13}\text{C}$  profiles were produced (see Figure 5), with the  $\delta^{18}\text{O}$  values converted into temperature values ( $^{\circ}\text{C}$ ). Isotopic analyses were funded with the support of a generous grant from the Conchologists of America.

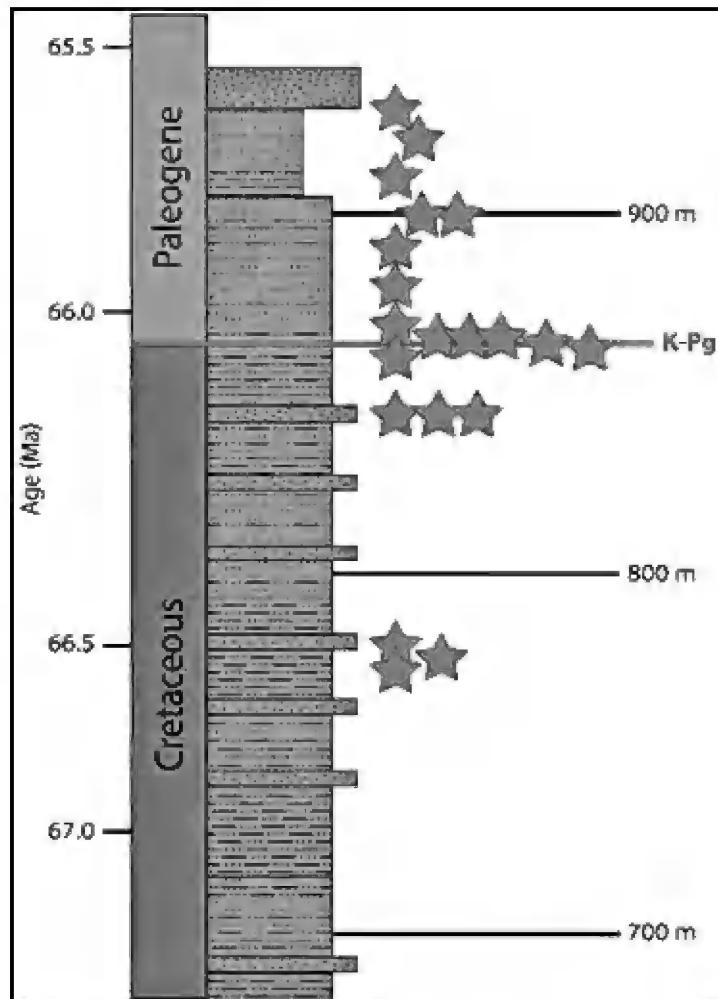
### Oxygen Isotope and Temperature Profiles



**Fig. 2: Illustration of the specimen of *Lahillia larseni* collected from Seymour Island by Captain Larsen in 1892. Image from Sharman & Newton 1898.**

The  $\delta^{18}\text{O}$ -derived temperature records from these shells reflect the warmer greenhouse conditions of the Cretaceous Antarctic, with calculated seawater temperatures typically around 6-12°C, as compared to typical temperatures around 1-2°C in the modern Antarctic Ocean (Clarke, 1988). The low range of temperature variation within each shell and the generally cuspatate pattern of the temperature profiles indicates that *L. larseni* likely only grew its shell during a small portion of the year. Given the extreme seasonality of their high-latitude environment, the lack of year-round growth for *L. larseni* is not surprising. Very low levels of sunlight in the austral winter would have limited the populations of primary producers which were likely an important source of food for filter feeders such as *L. larseni*.

The cuspatate pattern of the temperature profiles is also the first clear evidence that the growth bands in *L. larseni* represent annual intervals. A recent study by Moss *et al.* (2017) used growth-band counting to determine the age of some *L. larseni* individuals (58 and 42 years old), based only on the assumption that the growth bands are annual in



**Fig. 3: Stratigraphic column indicating the relative positions and ages of 20 sampled shells of *L. larseni*.**

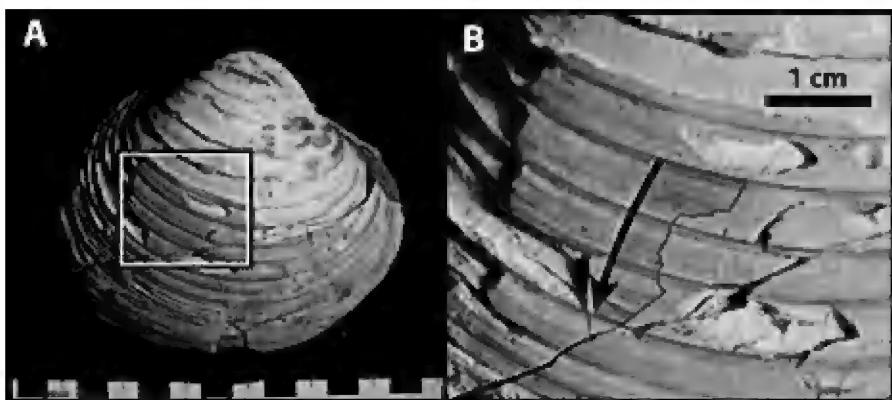
this species. With this new isotopic evidence for the annual occurrence of these growth bands, we can have more confidence in the accuracy of these determined lifespans.

#### Carbon Isotope Profiles

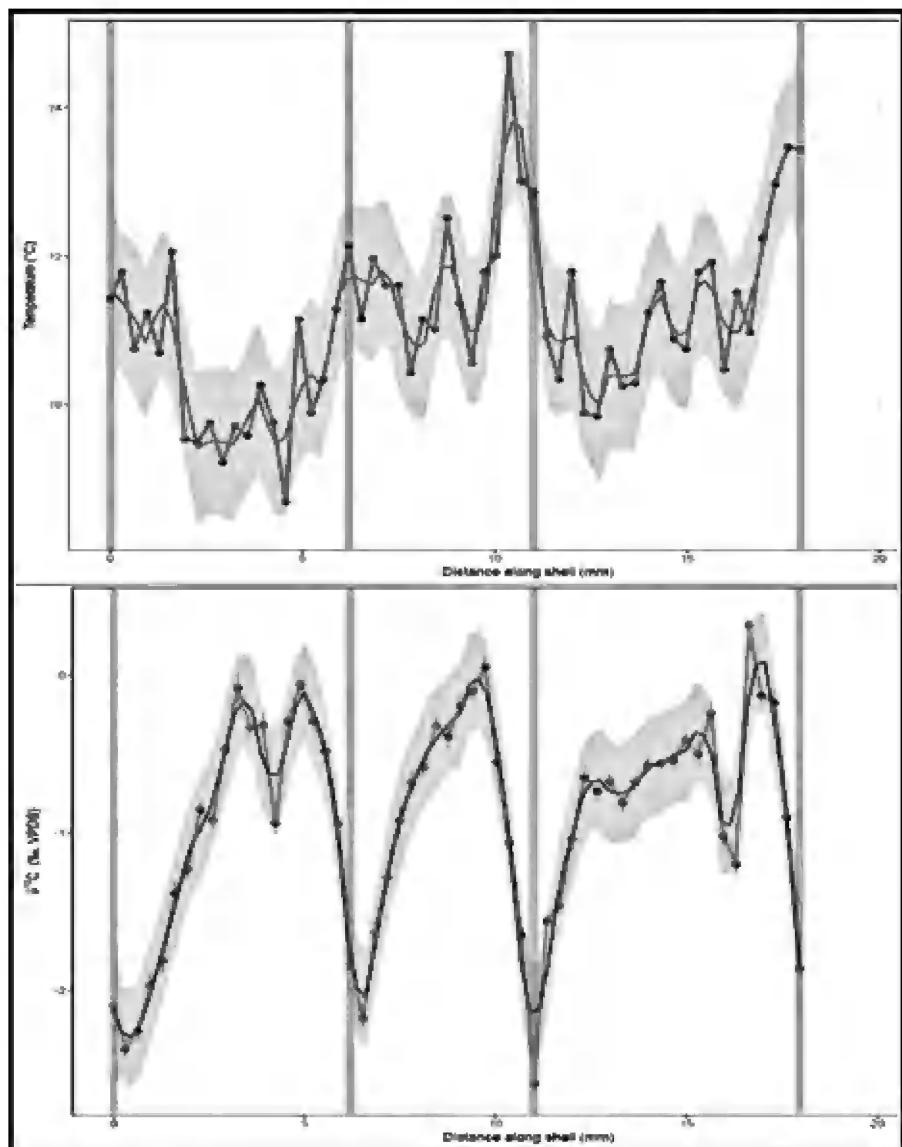
The carbon isotope records from the shells of *L. larseni* are highly cyclical, with higher  $\delta^{13}\text{C}$  values measured in the middle of growth intervals and much lower values recorded at growth bands, when shell accretion was slowing down. This pattern may reflect the seasonal variation of  $\delta^{13}\text{C}$  values in the seawater due to the seasonal cycle of primary production. Primary producers preferentially remove isotopically light C-12 from the surrounding water, leaving the seawater enriched in C-13, resulting in more positive  $\delta^{13}\text{C}$  values recorded in accretionary carbonate shells.

#### Ongoing Work

The bulk of the results from this study are still being interpreted. The temperature and isotopic profiles of all of the sampled shells will be used to reconstruct a record of environmental conditions for a nearly 1 million-year-long span of time across the K-Pg extinction interval. Evaluating the



**Fig. 4:** A sampled specimen of *L. larseni* (A) with inset (B) of the sampled area, outlined in black. Purple lines highlight the locations of growth bands, and the black arrow indicates the direction of growth.



**Fig. 5:** Ontogenetic temperature (top) and carbon isotope (bottom) profiles from the specimen of *L. larseni* pictured in Fig. 4.

temperature and  $\delta^{13}\text{C}$  profiles measured from each shell will allow me to determine the extent to which *L. larseni* utilized adaptive plasticity to survive the K-Pg extinction (e.g. whether it changed its season of growth to continue growing within a preferred temperature range during a period of climate change). Complete results of this study will form the manuscript of my master's thesis and will ultimately be published in a peer-reviewed journal.

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# Population genetics of *Phidiana hiltoni* O'Donoghue, 1927

Clara Jo King

Advising Professor: Dr. Ángel Valdés

California State Polytechnic University, Pomona

*Phidiana hiltoni*, a species of nudibranch, is known for its pugnacious behavior as it often attacks and eats other aeolids along with its more common diet of hydroids (McDonald, 1983). A paper by Goddard et al. (2011) focused on this particular species of nudibranch and highlighted new findings regarding the range expansion of this species into Northern California. Not only did they provide evidence of the presence of *Phidiana hiltoni* in an area much further north than its previously recorded range, but also showed that this particularly voracious species of sea slug was having a marked impact on the ocean benthos community it invaded. With both indirect impacts from competition for the hydroid food source and direct impacts by attacking and consuming native species of sea slugs, the paper brought to light a very pressing question - how did *Phidiana hiltoni*, with a historic range consisting of the Northeastern Pacific, from Baja California, Mexico, to the Monterey Peninsula, California, make it as far North as Bodega Bay, California?

My research project attempted to answer where this new population of *Phidiana hiltoni* originated. This information could then possibly shed some light on whether the species was introduced to the area by artificial means or if the temperate water-dwelling sea slug was taking advantage of warming coastal waters and expanding its range northward.

The first step in answering this question was to gather specimens from along its new and historic range. A permit was obtained to collect specimens from the field and generous colleagues and museums like the Natural History Museum of Los Angeles County, were enlisted to help by lending previously collected specimens. After over 100 specimens were gathered from locations along the California coast line, the collected specimens were preserved in 95% ethanol and a small portion of tissue was removed for DNA extraction using DNeasy kits. On these specimens, some quite old and some very new, the CO1 mitochondrial gene was analyzed using standard PCR reaction conditions and in-house and universal primers in hopes of getting a better analysis of the population genetics of the species. After it was determined that CO1 might not provide enough detail, a single specimen was used for the generation of a genomic library that was sequenced in an Illumina platform. This data was used for primer design for microsatellite regions. A custom PCR protocol was created with the newly made primers. The process was successful, however, and together, the mitochondrial and microsatellite data, were able to shed

some light on the invasive sea slug. Full results and analysis are in the process of publication.

**Goddard, J.H.R., T.M. Gosliner & J.S. Pearse. (2011).** Impacts Associated with the Recent Range Shift of the Aeolid Nudibranch *Phidiana hiltoni* (Mollusca, Opisthobranchia) in California. *Marine Biology* 158: 1095–1109.

**McDonald G.R. 1983.** A review of the nudibranchs of the California coast. *Malacologia* 24:114–276.



*Phidiana hiltoni* O'Donoghue, 1927, is a voracious predator that grows to about 50mm.

# COA Academic Grant Brief Report: morphological variation assessment among lucinid bivalves

Broc S. Kokesh

South Dakota School of Mines and Technology – M.Sc. Paleontology '18

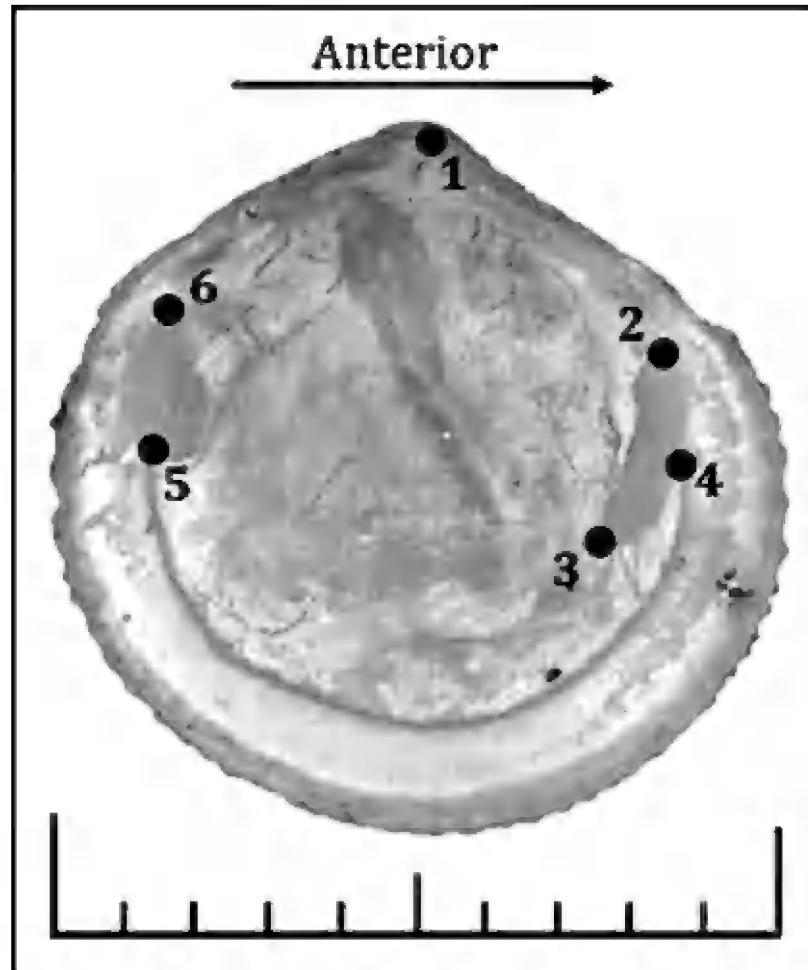
## Objective of Research Project

The major goal for this research project was to assess morphological variation among commonly synonymized lucinid bivalves within the genus *Ctena* Mörch, 1861. Specifically, *Ctena orbiculata* (Montagu, 1808) and *Ctena imbricatula* (C.B. Adams, 1845), both native to the Western Atlantic, were targeted as recent molecular analyses have distinguished the species (Taylor et al., 2011; 2016). Specimens of both species housed at the Bailey-Matthews National Shell Museum (BMSM) were imaged and digitized for geometric morphometric analyses to identify morphological features that best distinguish these species (Figure 1). While at BMSM, in-house specimens of *Ctena mexicana* (Dall, 1901), an Eastern Pacific species, were also investigated to expand the scope of the study, as there is much less information on this species and its relationships to the Western Atlantic species.

## Major Findings

All three species of *Ctena* exhibited significantly different mean shell shape (Table 1). Visualizing shape variation with a canonical variate analysis (CVA) demonstrated prominent separation among the three species along CV1, which explained 93.7% of the variation (Figure 2). Shape change along CV1 describes an elongation of the anterior adductor muscle scar in *C. imbricatula* and *C. mexicana*, which generally agrees with qualitative comparisons of the species (e.g. Taylor and Glover, 2016). Jackknife cross-validation resulted in a 91.7% classification accuracy, supporting the separation of species based on shape (Table 2).

In addition to shape, shell size was compared among the three species, using centroid size values extracted from geometric morphometric analyses. Median size was significantly different among the species (Kruskal-Wallis,  $W=0.92$ ,  $p=0.01$ ) (Figure 3). *Ctena orbiculata* was the smallest species, while *C. mexicana*, and *C. imbricatula* were larger in stepwise fashion.

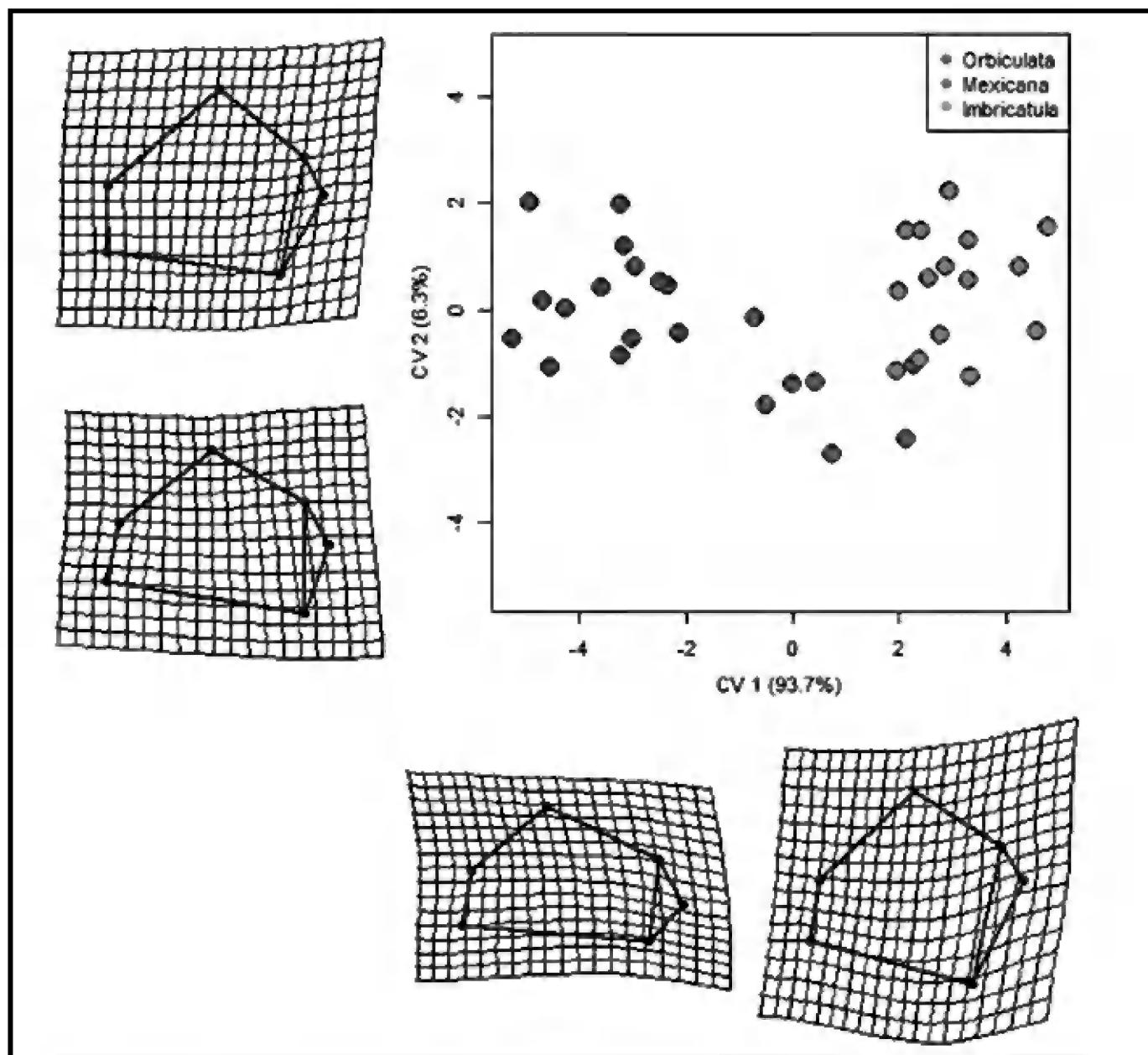


**Fig. 1. Fixed landmark configuration used in this study over a *Ctena orbiculata* specimen. Landmarks represent the following anatomical features: 1. beak of the shell, 2. maximum dorsal curvature of the anterior adductor muscle scar, 3. maximum ventral curvature of the anterior adductor muscle scar, 4. junction between the anterior adductor muscle scar and the pallial line, 5. junction between the posterior adductor muscle scar and the pallial line, 6. maximum dorsal curvature of the posterior adductor muscle scar. Anterior direction oriented to the right. Scale bar = 1 cm.**

**Table 1. Summary statistics for single-factor MANOVA testing for shape differences among species with 1,000 permutations.**

	Df	SS	MS	R <sup>2</sup>	F	Z	P
Species	2	0.151	0.075	0.629	27.96	5.223	<b>0.001</b>
Residuals	33	0.089	0.003				
Total	35	0.240					

Df – degrees of freedom, SS – sum of squares, MS – mean sum of squares, R<sup>2</sup> – coefficients of determination, F – critical value, Z = effect size, P – significance



**Figure 2. CVA ordinating shape variation among species. Groups include *Ctena orbiculata* (n=14), *Ctena mexicana* (n=7), and *Ctena imbricatula* (n=15). CV1 accounted for 93.7% of the variation while CV2 accounted for 6.3%. TPS grids correspond to shape change along each end of each axis from the overall average configuration.**

**Table 2. Jackknife cross-validated classification results, including counts and rounded percentages. Bolded values are correctly classified specimens. Overall classification accuracy was 91.7%.**

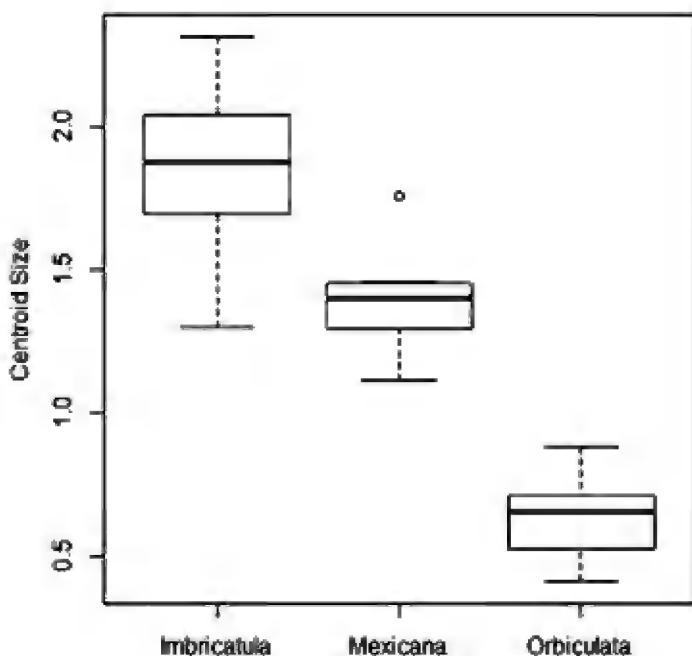
Original Group	Reclassification Assignments		
	<i>C. orbiculata</i>	<i>C. mexicana</i>	<i>C. imbricatula</i>
<i>C. orbiculata</i>	<b>14</b> (100%)	0 (0%)	0 (0%)
<i>C. mexicana</i>	1 (14.3%)	<b>5 (71.4%)</b>	1 (14.3%)
<i>C. imbricatula</i>	0 (0%)	1 (6.7%)	<b>14 (93.3%)</b>

### Significance of Findings

These results demonstrate patterns in both shape and size that are useful for distinguishing species of *Ctena* based on shell features. As many researchers do not have molecular data to support determinations of shell collections, reliable shell characteristics are essential for improving taxonomic accuracy. Geometric morphometrics also has the capacity to better improve morphological descriptions, which in the case of Western Atlantic *Ctena* have relied on characteristics relative to the other species. This can be problematic, as intraspecific morphology can vary widely from one population to another.

One important consideration that this research has led me to suggest is to use only the largest specimens in a sample for comparisons. Using very small, even larval specimens, makes these morphological trends difficult to observe. In the case of *C. orbiculata* collections at BMSM, I actively avoided using smaller specimens that could not be confidently identified, as some samples may include *C. imbricatula*. In this study, the 14 largest specimens of *C. orbiculata*, compared to the 15 available specimens of *C. imbricatula*, effectively distinguish each species by morphology.

While beyond the scope of this study, there also appears to be a phylogenetic signal in size and shape data. Specifically, molecular data suggest that *C. mexicana* is the sister taxon to *C. imbricatula*, despite geographic separation across the Isthmus of Panama (Taylor et al., 2011). These patterns are worth exploring in greater detail, as the evolutionary history of *Ctena* is poorly understood and it is likely that established species actually represent species complexes we have yet to identify (Taylor et al., 2013). Similar biogeographic and phylogenetic questions exist for other lucinid genera in the Western Atlantic-Eastern Pacific (e.g. *Lucina*, *Lucinisa*, *Parvilucina*), opening possibilities for this study to be expanded to other clades.



**Figure 3. Boxplot of centroid sizes for each species. Bars represent standard error and dots represent outliers. Groups include *Ctena orbiculata* (n=14), *Ctena mexicana* (n=7), and *Ctena imbricatula* (n=15).**

### Professional Development

This study was designed to overcome a pertinent question in my master's thesis: which species of *Ctena* am I working with? My thesis research investigated intraspecific morphology of *Ctena* specimens from marine lake habitats on San Salvador Island, Bahamas. Because *C. orbiculata* and *C. imbricatula* overlap in geographic range in the Bahamas, accurate species identification was a crucial preliminary issue. With the aid of the morphological dataset created from this study, I determined that my specimens were most likely *C. orbiculata*.

Working at the BMSM also allowed me to connect with other conchologists and exposed me to a new museum archival system. As I continue my education in paleontology, this exposure will prove valuable as I further develop my skills in museum studies.

The results reported here are expected to be presented at scientific conferences in the coming year, primarily the Geological Society of America's annual conference. I am also investigating how to expand this project (include more species, incorporate molecular data, etc.) so that it may contribute to peer-reviewed publications on lucinid morphometrics, phylogenetics, and biogeography. I also recently received digitized images of type specimens for each species, which will be integrated into the morphological dataset to test how well their shapes represent the full scope of morphological variation within these species.

## Acknowledgements

I thank the Conchologists of America for their financial support of this project. I would also like to thank Dr. José Leal and the staff at the Bailey-Matthews National Shell Museum for their hospitality, access to collections, and helpful discussions.

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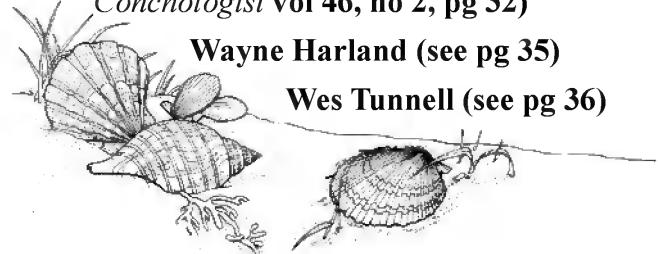
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## In memoriam:

### Paula Della Bosca (see pg 37)

**James Cordy** (see "James Cordy, a life of shells" by F. Matthew Blaine in *American Conchologist* vol 46, no 2, pg 32)

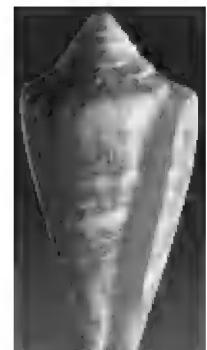


### Wayne Harland (see pg 35)

### Wes Tunnell (see pg 36)

**Wayne McGraw Harland (17 July 1946 - 12 June 2018)**

Captain Wayne McGraw Harland, also known by friends and family simply as 'Bubba,' age 71, passed away after a very adventurous life. Born in Washington, DC, he was the son of the late John Harland and Jane (Miller) Harland. He served his country in the Marine Corps and the Vietnam War. He spent much of his professional career working with computers, but Wayne was an adventurous man and avid collector. A few of the items Wayne collected, restored, and sold, included Corvette Stingrays, model trains, shells, and ancient shell books. He traveled the world scuba diving to study and collect shells. He was passionate about the shelling community, joining the Broward Shell Club, showing his finds at shell shows, and then becoming an esteemed judge at such events in Florida and elsewhere. He discovered several new marine shells, most notably *Conus harlandi*. He is survived by his loving family including his first wife Donna Harland, his daughter Kimberly Beare and her husband Danial and their children Danny, Jacob and Jacqueline of Marshville, NC, son-in-law Michael Levy, his wife Brooke, and their two daughters Maddix and Hunter of Carver, MA. He was preceded in death by his wife, the former Annie Levy.



***Conus harlandi***  
**Petuch, 1987**

I think I first met Wayne at a Broward Shell Club Show in the late 1980s. It was immediately apparent that the ingrained cognomen 'Bubba,' however apt for a man of his physical dimensions and social informality, belied an aptitude for intensive natural history field work and scholarly pursuits. As noted in the text above, drawn liberally from published obituaries, Wayne steered MV *Ragamuffin*

to shelling destinations, dove, and traveled far and wide, and thus was able to illuminate a corner of the natural world before, and for, any of the rest of us. With near obsession, he reconciled his finds with what was known by experts, held in museums, and was treated in the literature. It was in the latter labor he made an enduring mark.

Later he wrote of how he soon became aware that many of the species he found (or sought after) were named a long time ago, that these old published works were scarce and, when available, often only with great inconvenience, “waiting for a book was not my idea of a productive day,” he opined. Thus he set out to build a library of classic works in conchology. A decade and a half later, early in 1998, James A. Findley, Librarian of the Bienes Center for the Literary Arts, affiliated with the Main Ft. Lauderdale Public Library, convinced Wayne to make a major public exhibit. Accordingly, Bubba selected 39 antiquarian (1684-1912) conchological iconographies from his library and displayed each, opened to the appropriate page, with which he juxtaposed a matching actual specimen(s) from his collection. He wrote a companion 24-page exhibit catalogue, which provided not only the bibliographic underpinnings of each work but often key aspects of the historical context, printing and illustration methodologies, accuracy of the taxonomy, even personal aspects of an author’s life. Fellow bibliophile Dr. Alan Kabat pointed out to me that this exhibit catalogue, which was offered for sale and must have met with sufficient demand to have caused its disappearance from the internet marketplace, may well be the only scholarly shell book ever **to contain a genuine shell** and that each of (at least his three) the copies contained a different species. The first text page of a Kabat copy had a Philippine pulmonate terrestrial snail (Bradybaenidae: *Helicostylinae*, see image below).

Bubba’s wit was swift and sophisticated. Although a gifted raconteur, he was at his best with situational one-liners. Once when a retired airlines pilot in our company declared a preference for a proprietary drug over the “genetic” equivalent, Wayne launched a riposte in nanoseconds: “What kind of plane did you fly, a malaprop?”

Wayne Harland was a quintessential citizen conchologist, from field to curation to library. He was no stranger to hard work, a staunch and exemplary advocate of good times, and an engaging companion. Mutual friend, Dr. Jerry Harasewych said shortly after Wayne’s death: “I will bet that toasts to Wayne will be raised in Moscow, France, and Argentina tonight, and many other places as well.” I think Bubba would approve.

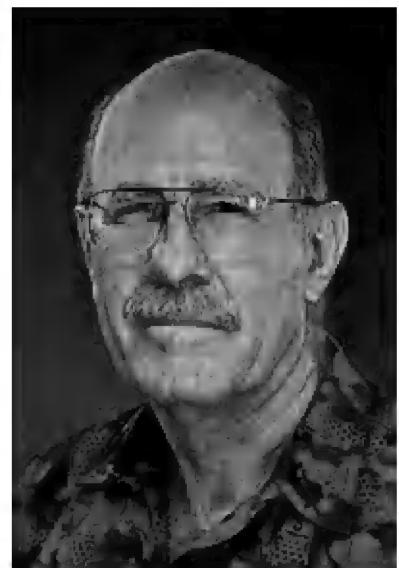
Harry Lee



Wayne Harland’s book with an actual shell.

**John “Wesley” Tunnell,  
Jr. (2 May 1945–14 July  
2018)**

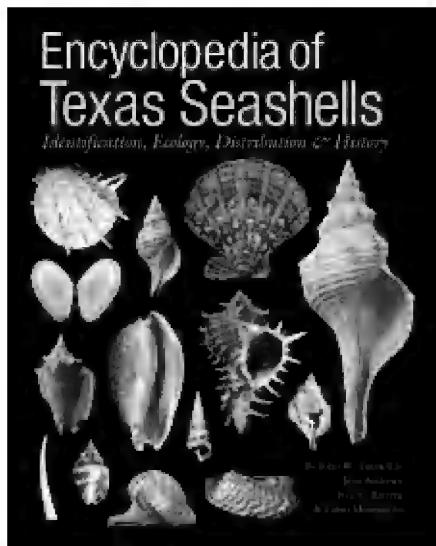
Texas and the Gulf of Mexico region lost a beloved marine biology professor after a prolonged battle with cancer. Many know him from his Texas shell books, but he was also interested in corals, biodiversity, conservation biology, and many other topics. Wes was an inspiration to students; he paid attention to each person, believed in them, and made everyone feel important. He was honest, stern, but fair. He was my mentor and a friend; he was a good man.



Wes was born in Biloxi, MS, while his father, a Texan from Gregory, served in the U.S. Army Air Force during World War II, at Keesler Field, Biloxi, MS. His family moved back to Texas and settled in Taft, a town of 3000 people in South Texas. Both of his parents were medical doctors, Drs. John W. Tunnell and Rosalie N. Tunnell; together, they treated all in town and delivered babies for decades. Wes married his high school sweetheart, Kathryn Aldridge, in 1966. They had three kids: Stephanie, James and Jace, who gave them five grandkids. He was family-oriented, with a strong Christian faith, and was a proud South Texan.

Tunnell attended Texas A&I University, Kingsville (now Texas A&M University-Kingsville) and graduated with a BS in Biology (Chemistry minor) in 1967, followed by a MS in Biology (Geology minor) in 1969, studying the marine mollusks of 7½ Fathom Reef, a small but diverse reef near Corpus Christi. Between 1969-1971 he served in the U.S. Army at Ft. Baker, Sausalito, CA. He then went back to Texas and attended Texas A&M University, College Station, and studied the mollusks of Lobos and Enmedio coral reefs in Campeche Bank, Mexico, receiving his PhD in Biology in 1974. Tunnell joined Texas A&I University (now Texas A&M University-Corpus Christi, TAMU-CC), a small school at the time, as the single faculty in the department of Science and wore many hats. He retired as Emeritus Professor in 2015, but continued to work on a part-time basis until the end of his life.

Tunnell had an accomplished 41-year academic career. He advised or co-advised, trained, and mentored 71 master’s students, seven Ph.D. students, and four postdocs, besides thousands of undergraduate students who took some of the 18 courses he taught over the years. Among his classes was Coral Reef Ecology, the most popular course on cam-



pus. Over a 32-year period, Tunnell took hundreds of students to dive and study coral reefs in Mexico. Biology of the Mollusca was a popular graduate course, with field trips to the Texas coast. Many of his students moved on to work in academia and industry. Wes often formed life-long bonds with students.

Tunnell co-

founded the Center for Coastal Studies in 1984 and served as its director until 2009. He developed two bachelor programs, four master programs, and two Ph.D. programs. He was essential in the creation of the Harte Research Institute for Gulf of Mexico Studies in 2000; he served as Associate Director (2001-2015), and Endowed Chair for Biodiversity and Conservation Science since 2011. His 150+ grants and projects totaled over \$20M and resulted in 115 scientific publications, 69 technical reports, and seven books, including the *Encyclopedia of Texas Seashells*. He also created and was the editor of two book series at Texas A&M University Press: the *Harte Research Institute for Gulf of Mexico Studies* series, with 14 books, and the *Gulf Coast Books*, with 31 books published to date.

Tunnell served in many national and international committees related to marine issues, including coral reefs, conservation, oil spill, coastal development, etc. He was also Adjunct Curator of Malacology and Marine Biology (2007-2014) and Curator of Marine Biology (2014-2015) in the Houston Museum of Natural Science, and together with Tina Petway, designed and developed the Coastal Texas Exhibit, of which he was very proud. Despite his many accomplishments, he was very humble and always pointed out that his success was the fruit of collaborations.

I feel honored to have worked closely with Wes since he recruited me as a postdoc in 2004 to work on the Biodiversity of the Gulf of Mexico project, the *Encyclopedia of Texas Seashells*, and many other projects. He was the single most influential figure in my professional life, and I am greatly indebted to him. It was heartwarming to learn that many people at his packed memorial and celebration of life service cited Wes as a major force in their lives as well. He will be missed dearly. His vast legacy will move on.

Fabio Moretzsohn  
Life Science Department  
Texas A&M University-Corpus Christi.

**Paula Della Bosca (12 July 1956-15 April 2018)**

Paula was the life partner of Merv Cooper and supported him in all of his endeavours in Australia and abroad. The image is of Merv and Paula enjoying a day on the beach. She will certainly be missed.



**36<sup>th</sup> PHILADELPHIA SHELL SHOW**

OCTOBER 27 & 28, 2018  
[WWW.PHILLYSHELLCLUB.ORG](http://WWW.PHILLYSHELLCLUB.ORG)

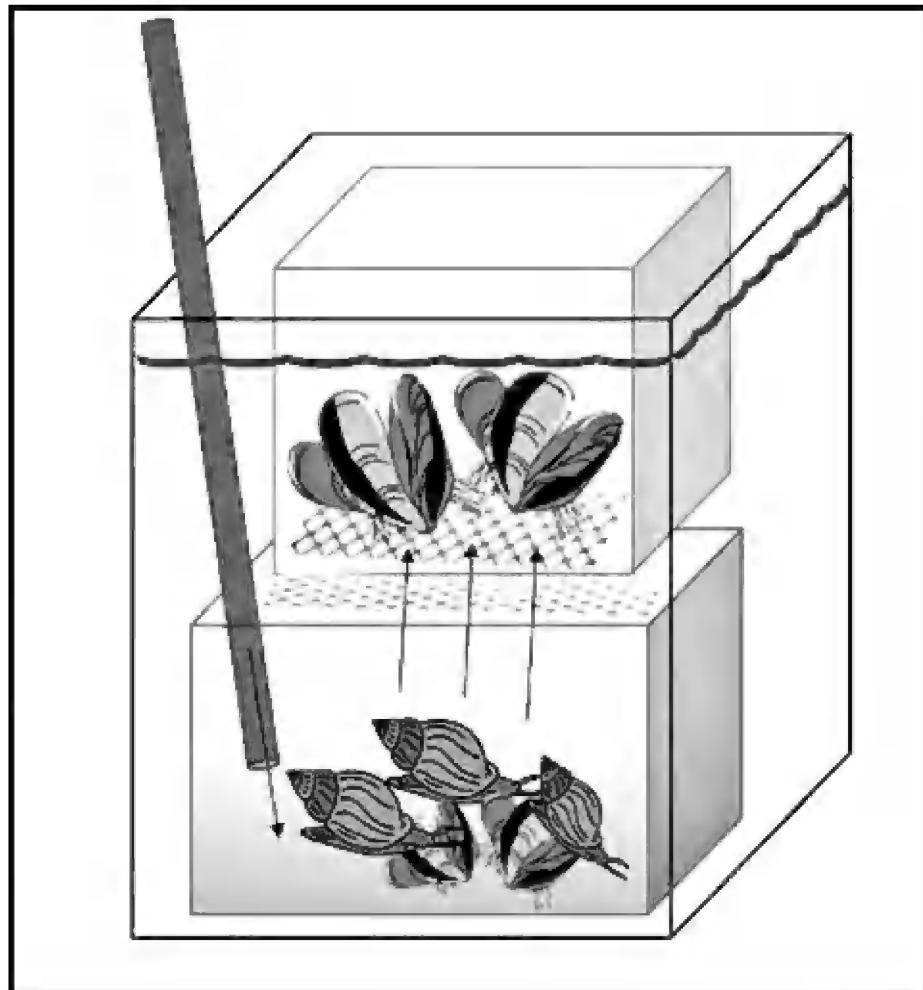
# COA Academic Grant Report: Under Pressure: The Physiological Effect of Multiple Stressors on *Mytilus edulis*

Kristen Hosek and Dr. Mackenzie Zippay

Intertidal communities face unique challenges brought on by the daily tidal flux and seasonal temperature variation. The specialized adaptations displayed by many intertidal mollusks, such as hypoxia/anoxia strategies and elevated temperature tolerance, makes them an ideal study system to better understand physiological adaptations in a variable environment (McMahon 1988). While the effects of abiotic factors (such as oxygen availability or temperature elevation) have been studied extensively, little is known about how those environmental stressors work in tandem with biotic stressors such as species interactions. Intertidal communities are complex and dynamic, and different species exhibit differential susceptibility to environmental stress (Somero 2002), so our project sought to elucidate the complicated interplay between abiotic and biotic stressors.

To determine the interactive effect of multiple stressors, we performed a multi-factorial study of the cellular mechanisms that underlie the putative effects of feeding history, temperature elevation, and predation risk on a dominant intertidal organism. We chose to work with the blue mussel, *Mytilus edulis* Linnaeus, 1758, which inhabits the low intertidal zones of the southern Gulf of Maine. These mussels are currently experiencing some of the fastest warming waters (Pershing et al. 2015) and significant population decline, so understanding their plasticity in response to the changing environment will be essential for conservation efforts, as these organisms are both commercially and ecologically important (Sorte et al. 2016).

Mussels were collected in July 2017, and taken to the Marine Science Center at Nahant, MA, where they acclimated for 2-3 weeks under ambient temperatures (15-16°C). Half were maintained in coarsely filtered sea water and fed *Isochrysis* as a supplement, while the other half



**Fig. 1 Visual of mesocosm set-up. Predator cue was created by *Nucella lapillus* feeding on juvenile conspecifics. Seawater flowed down a hose and pushed predator cue up to the experimental mussels.**

were starved during this period. Mussels from both feeding groups (starved and fed) were exposed to the presence or absence of predator cues (see fig. 1) at five water temperatures (15.5, 23.5, 25.5, 27.5, and 30.5 °C,  $\pm 0.5^\circ\text{C}$ ) across four short-term time points (between 0-60 minutes) to examine their *initial* cellular response under acute stress events. The experiment was run repeatedly for a total of  $n=5$  replicates at each temperature, food, and predator combination. Samples were frozen and taken back to Sonoma State University in Rohnert Park, CA for biochemical analyses.

We measured the activity levels of key metabolic enzymes and antioxidant defense capabilities to expound the effects of abiotic and biotic stressors on physiological processes. Citrate synthase (CS) is a rate-limiting enzyme of the Krebs cycle and indicative of aerobic respiration. The interactive effect of predation risk and temperature in the short time frame of an hour had a significant effect on CS activities as predator exposure seemed to cause inverse strategies of aerobic respiration (see fig.2). Total antioxidant capacity (a suite of enzymes and macromolecules that counteract damaging reactive oxygen species) was primarily affected by temperature elevation, with higher temperatures causing an up-regulation of defenses (ANOVA,  $F_{4,199}=4.045$ ,  $p=0.0036$ ). The responses to a combination of stressors are graded and complex. Our results demonstrate the ability of *Mytilus edulis* to make biochemical adjustments to meet energetic needs under acute stress events and provides insight into the physiological strategies of this important ecosystem engineer.

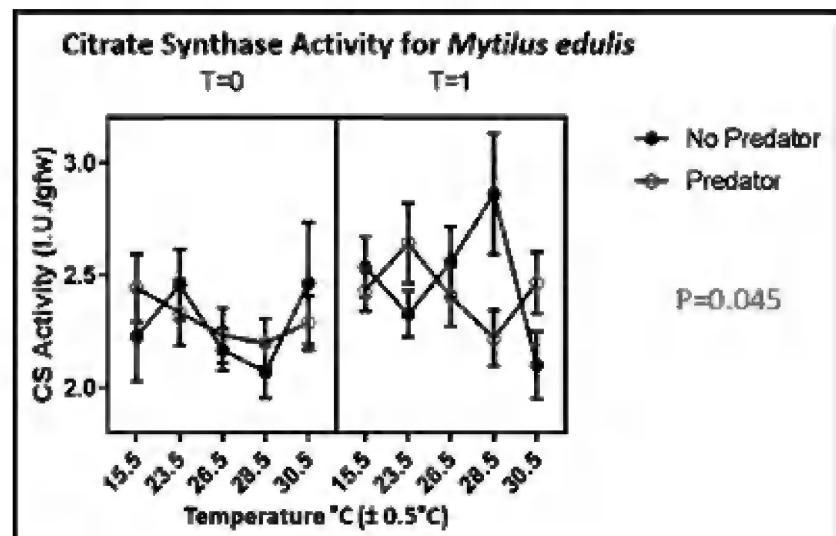
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**Fig. 2** Linear mixed model of the effects of temperature and predation risk on CS activity levels (mean  $\pm$  SEM,  $n=10$ ) comparing T=0 and T=1 hour of exposure ( $F_{10,189}=1.9105$ ,  $p=0.045$ ).



*Mytilus edulis* Linnaeus, 1758 (blue mussel) in a typical intertidal aggregate grouping. Image by Andreas Trepte, Wikipedia. com.

# Philippines Convention Fulfilled

David Kirsh

This April, the Philippines had its first sheller's convention ever, and it was an unconventional convention. Led by Mark and Elgie Reekie, the conventioneers converged from all over the world – 18 nations – to do something we all enjoy: find shells. That, and swim with a whale shark, snorkel, do some sightseeing, eat lots of great food, peruse the dealers' bourse, and meet all the other fascinating people. And yes, there was a bit of convention-like sitting in the museum during talks on shells (and crabs and echinoderms), and shell exhibiting for awards, but most of the convention was outdoors.

Mark Reekie, who has led numerous shell tours in the Philippines, put together this ambitious package designed for collectors to have fun. He couldn't have done it without the moxie of his wife Elgie, however, who confesses with her infectious smile that she is known as a mother hen. Elgie's entire family rolled up their sleeves for food preparation, transportation, shell cleaning, boating, etc. Their friendly hospitality and industriousness was extraordinary.

The 2018 Philippines Seashell Convention was held on the island of Siquijor (pronounced see-key-HOR), which is the dot at the bottom of the exclamation point of Cebu (see-BOO) island. Conventioneers mostly stayed at the lushly landscaped Coco Grove resort and met 1/8 mile away for most events at Marelle's Shell Museum, where there was a respectable display of Philippines shells with an attached restaurant/bar. The museum was entirely constructed by Elgie. Mark says he never saw it until it was finished.

Conventioneers flew in to Cebu City, which now has over three million inhabitants. After an initial night or two in this bustling industrial port, the shellers boarded the Ocean Jet ferry for the four-hour trip to Siquijor.

The Reekies all the while, were attentive to arrangements for travel and outfitting of all the guests. To be able to attend to the needs of 65 people in a narrow time frame was no mean feat. For example, it was Elgie who guided me to and through the nearby Cebu mall to be able to get a good rate of exchange from dollars to pesos, with a stop thrown in to pick up flip-flops which I'd neglected to pack. There was much more of this kind of detailed guidance offered by the Reekies to ensure a good experience.

I'm known as a micro man, obsessed with shells 5mm or less. Yet, once on Siquijor, I was certainly pleased to find a large live *Ovula ovum* beside two *Calpurnus verrucosus* on one snorkel outing. There were many other finds of common species within easy access. There is a reef flat right in front of Coco Grove teeming with small creatures; much of it is off-limits for collecting, but an adjoining area



A rather nice room at the Coco Grove resort, Siquijor.



Above: Marelle's Shell Museum from the front walkway.

Below: Some of the colorful and extensive displays found within the museum. All done by Elgie Reekie.





*Liroceratia sulcata* (O. Boettger, 1893) 1.1mm, Siquijor, drift line grit.



Roasting chitons on the Siquijor shoreline.

is fair game. I was able to recognize many of the common small Indo-Pacific species such as *Cypraea moneta* and *C. annulus*, and *Conus coronatus* and *C. ebraeus*, within a few minutes among the seastars and urchins.

Not only were there outings for snorkeling and checking the haul from tangle nets, but also a land snail hunt in the mountainous center of the island. Due to dry weather, the terrestrials were scarce, but I found a *Pythia scarabaeus* in the soil at over 2,000 feet elevation (just slightly lower than Asheville, NC). Finding this shore-dwelling ellobiid might be testimony to the uplifting of the island thousands of years ago.

My default collecting habit is scanning the drift line hunched over with my hobby loupe. I did find a diversity of shells at the ends of several beaches, especially by locating the small hermit herds, but also inspecting the coral rubble.

Other delegates wanted to dive and (at their own expense) Elgie arranged with a nearby dive shop for night diving on several nights. Those guys got the choicest shell booty. Unfortunately, I haven't been able to dive for the past dozen years, but there was no lack of shelling opportunities and when guests wanted to they could relax at the resort.

At the end of the convention, most delegates returned to Cebu, where our shells got official Filipino permitting for international transport. We visited local tourist attractions and the facility of Guido Poppe's Conchology, Inc—a treat for any shell collector to behold. Guido also graciously treated us to a good-bye banquet at the Radisson Blu.

This brief description can't do justice to the experience of being in Siquijor at the convention. At the request of many of the guests, Mark and Elgie were asked to "do it again," so they're already planning for next year. If you're interested, feel free to contact them. For information contact them at [seashelldude@gmail.com](mailto:seashelldude@gmail.com) or [marellesuwwmuseum@gmail.com](mailto:marellesuwwmuseum@gmail.com)



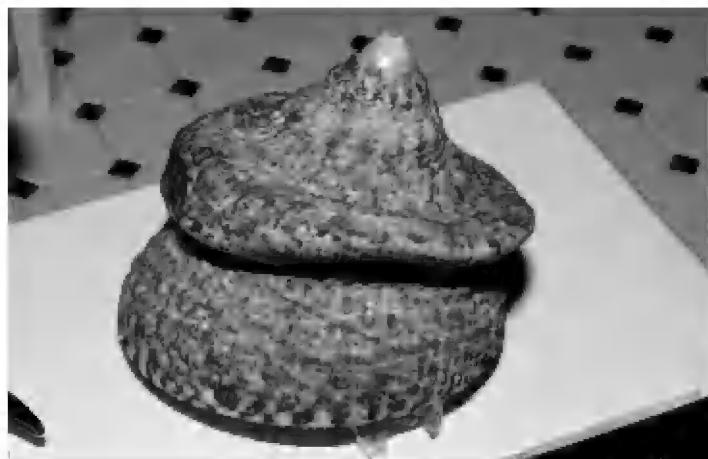
*Zafra troglodytes* (Souverbie, 1866) 2.8mm, Siquijor drift line grit.

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## St. Petersburg Shell Show 22-23 Feb 2018



Anne Joffe won the Conchologists of America Award at the St. Petersburg Shell Show. Her display was about how mollusks heal themselves of various injuries.



One of the 'hospitalized' shells in Anne Joffe's display, a truly bizarre *Tectus maculatus* Linnaeus, 1758.



Carolyn & Earl Petrikin won Shell of the Show, self-collected, for *Melongena corona* (Gmelin, 1791).



Pat & Bob Linn won the DuPont Trophy and Shell Show first place for worldwide Olividae.



John Jacobs won Shell of the Show, any manner, for *Scutellastra mexicana* (Broderip & G.B. Sowerby I, 1829) (giant Mexican limpet).

## Gulf Coast Shell Show 2-3 June 2018



Gene Everson won both the COA Award and the DuPont Trophy for his displays at the Gulf Coast Shell Show. The COA Award was for his Naticidae display and the DuPont Trophy for his display of self-collected Australian Seashells. Gene is presently in Mozambique and Madagascar for a month of shell collecting. It will be interesting to see his displays for 2019.

# The man behind the world's largest private shell collection

Catalina Ruiz & Paul Ramey

**Volunteer Harry Lee has been transferring shells to the Florida Museum one car load at a time for eight years**



**Volunteer Harry Lee, in his usual attire of a festive Hawaiian shirt, uses a microscope in Dickinson Hall to examine micromollusks. Florida Museum photo by Kristen Grace.**

Nearly every Wednesday at 7:05 a.m. for the past eight years, Dr. Harry G. Lee drives 90 minutes from his home in Jacksonville to volunteer in the Florida Museum of Natural History Invertebrate Paleontology Division, usually accompanied by a trunk full of shells. Lee began donating his shell collection to the museum on the University of Florida campus in 2010, and continues to personally transport increments of a collection that is, by some estimates, perhaps the largest private collection in the world.

"The ability of museums to absorb a collection is limited by the manpower and other resources of a department," Lee said. "Especially with a collection of this magnitude."

Today, Lee, a self-proclaimed museum rat and citizen scientist, considers his collection to be an educational resource for future researchers. Florida Museum Malacology Collection Manager John Slapcinsky wholeheartedly agrees.

"Harry's website posts species lists of mollusks for many sites in Florida, and because his identifications and data are so well trusted, these lists are a valuable resource," Slapcinsky said. "UF students in our lab and in the invertebrate paleontology lab often use them to guide identifications of their own research specimens."

Lee began collecting shells at the age of 6, while



This *Mikadotrochus beyrichii* (Hilgendorf, 1877), is one of numerous specimens donated by Harry Lee. Florida Museum photo by Kristen Grace.

visiting his grandmother in South Orange, New Jersey. Her next-door neighbor, Max Hammerschlag, a retired scissor-maker, collected shells and taught Lee how to properly document and catalog different species. Hammerschlag gave the young Lee shells to take home and examine, and he started his collection in 1947. Although his dedication was minimized by the distractions of athletics and girls in high school, he knew he would continue to collect shells.

"It was the one great continuum in my life," Lee said.

As an attending physician in internal medicine, Lee's true passion never faltered. Every night he would return from a tiring day at the hospital and office, strip off his lab coat and get to work on his shells. During weekends and vacations, he traveled to distant lands hoping to discover hidden, rare shells, and would regularly scale cliffs, dive in deep oceans, and trudge through swamps on his days off. His travels took him to Australia, Fiji, Hawaii, Kenya, Mexico, the Philippines, Somalia, Tahiti, Tanzania, and numerous West Indian islands, to name just a few.

"Wherever the mollusks are, I will go," Lee said.

The most important discovery of his career, however, occurred while crawling in his own backyard in Jacksonville, in 1980. Lee found a new-to-science species of



**The *Siratus alabaster* (Reeve, 1845), is a large delicate murex usually found in East Asia. Florida Museum photo by Kristen Grace.**

carrot glass snail, *Dryachloa daica*. It is the only species in its genus, and Lee and the late Florida Museum curator Fred Thompson described and named it that same year.

Lee's collection is stored mostly in his basement, where every inch of wall space is covered with bookshelves and cabinets that hold the precious specimens. These include his sentimental favorites: the 36 shells Lee named and the 18 shells named after him.

His most highly prized shell is the left-handed variant of the sacred shell of Hinduism, the Indian chank. This species is rare, with only 1 in 600,000 shells coiling in the opposite direction.

Lee said he loves uncovering a shell's story and believes that "shells are intrinsically beautiful." "They form templates of evolution in beautiful, mosaic patterns," he said.

This belief and his collection also resulted in the creation of his book, "Marine Shells of Northeast Florida." In a joint effort with about 50 shell club members over more than two decades, the Jacksonville Shell Club published the book in 2009. With the profits from book sales, in 2010, Lee and the other members created a \$2,000-\$2,500 academic grant for master's and doctorate students, awarded annually by the Conchologists of America Inc., an international society for shell enthusiasts.

After seven years, only about one-third of the collection has been transported to the museum, and Lee does not know when he will finish. "It's a work in progress," he says.

#### **Volunteer of the Year**

Lee has volunteered more than 2,000 hours integrating his shells into the museum's collections and also working with fossil micromollusks, defined as shells less than 5.5



**This rare specimen from Harry Lee's collection shows left-handed coiling of the *Turbinella pyrum* Linnaeus, 1758, or sacred chank. Only 1 in 600,000 shells of the sacred chank coils in this direction. Florida Museum photo by Kristen Grace.**

mm in diameter. He removes and identifies these specimens from sediments he and others collect and photographs them with a scanning electron microscope.

In 2017, he was honored as the museum's James Pope Cheney Volunteer of the Year for research and collections, nominated by museum malacologist Slapcinsky and Roger Portell, the museum's invertebrate paleontology collection director. Slapcinsky said Lee is well-known nationally and internationally among the malacology community as one of the most giving and knowledgeable amateurs.

"Almost every molluscan collection by a mollusk enthusiast that has been donated to the (Florida Museum) Malacology Division in the last 40 years bears Harry's fingerprints in the form of his identification labels," Slapcinsky said. "He has corresponded with numerous amateurs and professionals, not only helping with identifications, but tracking down rare publications, sharing specimens and facilitating interactions between the lay community and the professional community."

Portell said Lee is responsible for building the museum fossil micromollusk collection into an invaluable resource. "Micromollusks are not common in museum collections because of the time and effort it takes to sort and

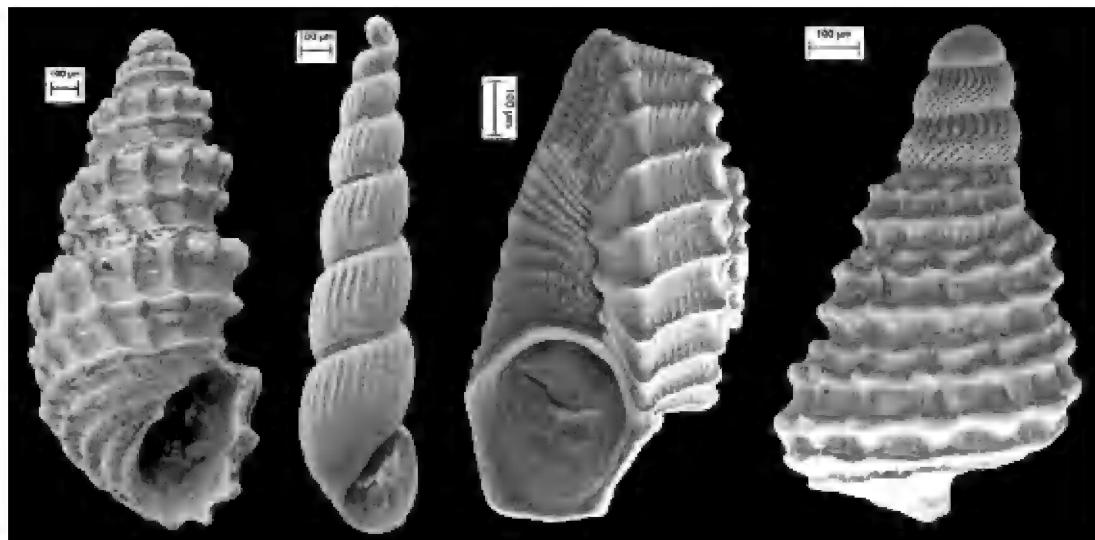
identify them," Portell said. "Harry has spent countless hours looking through a microscope picking through hundreds of thousands of pieces of shell hash, sorting out thousands of whole shells of 500 species. He imaged over a thousand of these fossils using electron microscopy and also identified the species, many of which are new to science, further enhancing the importance of this collection. His contributions are appreciated more than most people could imagine."

Slapcinsky said he has benefitted personally from Lee's help many times. "While Harry has not been volunteering in the Malacology Division directly, he is a walking encyclopedia," Slapcinsky said. "He is well versed in Latin, and is a fount of historical, taxonomic, and other arcane knowledge, which he shares generously. Harry also is a tremendous asset to the molluscan community, as he answers questions on molluscan listservs, judges shell shows, serves as editor and writer for the Jacksonville Shell Club newsletter, '*The Shell-O-Gram*,' served as a board member for the Bailey-Matthews National Shell Museum (on Sanibel Island), is the current president of Conchologists of America, and is a scientific adviser and contributor for the JaxShells website.

Lee is humble about the praise and receiving the Volunteer of the Year award, saying he is thankful to the museum for making his retirement entertaining. "It goes without saying that I find working at the Florida Museum quite gratifying," he said. "Working among dedicated and talented scientists gives one a sense of camaraderie and common purpose."

#### Sources:

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John Slapcinsky, slapcin@flmnh.ufl.edu, 352-273-1829



**Harry Lee volunteers much of his time discovering micromollusks like these under a microscope. The  $\mu\text{m}$  measurement used for scale stands for a micrometer or a micron. The average cross-section of a human hair is 50 microns. The scale bars are 100 microns. Florida Museum image by Kristen Grace.**



**Roger Portell, Florida Museum Invertebrate Paleontology Collections Director, from left, and volunteers Harry Lee and Rick Edwards study shells in the collections at Dickinson Hall on the University of Florida campus. Florida Museum photo by Kristen Grace.**

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Originally posted as an online article of the Florida Museum web site on 27 June 2018. It can be referenced online at: [www.floridamuseum.ufl.edu/science/private-shell-collection/](http://www.floridamuseum.ufl.edu/science/private-shell-collection/)

# R. TUCKER ABBOTT'S 100<sup>TH</sup> BIRTHDAY AND YOU ARE ALL INVITED TO THE PARTY

Anne Joffe



Blow up the balloons, put on a Happy Face, and get ready for a fun-filled birthday celebration. This will happen June 17-23, 2019, at South Seas Plantation Island Resort on the beautiful island of Captiva, Florida.

There will be two days of terrific field trips (17 and 18 June), including flats and beach shelling, a thriller of a boat ride, trips to Cayo Costa and Useppa Islands, a Tour of Edison's Lab, and a variety of other activities for everyone. Opening day, Wednesday (19), will bring silent auctions, programs, as well as a surprise event before the Welcome/Birthday reception. Dress code is everyone must wear a shell shirt. On Thursday (20), more silent auctions, programs, and bringing back the Snail Parade. So start polishing up your snail collection and watch for more on this. Our oral auction ends this perfect day. Friday brings more of the same, plus the annual business meeting, a preview of next year's meeting, and the banquet/birthday party will be the icing on the cake, birthday cake that is. No presents required, just your presence. Saturday and Sunday (22-23), will be the world famous Shell Bourse, with dealers from all over the world selling shells and other related items. This is open to the public, so make sure you tell all your friends to join in.

Our condo accommodations consist of one bedroom, one bath units, full kitchens, balconies, and living rooms with hide-a-beds, so each room can sleep four very nicely. The rate is \$179 plus tax, including the resort fee, and all amenities to the resort. They are located right next to our meeting area, so it's a very

short walk to the hall. Or, we have two bedroom, two bath units as well. Contact me for information on these units. The resort boasts 6 restaurants on site, and within a short walk on Captiva, there are 9 other places to dine. Many will come pick you up.

There is a championship golf course right on the sea, full fitness center, shuttle bus to take you around the property, all types of water activities, fishing, and boating. The resort is surrounded by miles of white sand beaches, something for everyone. This is the perfect place to bring your whole family.

So, you can now book your rooms. To do so, call: 239-472-5111, or toll free US and Canada: 800-282-3402, or online: [www.southseas.com](http://www.southseas.com). You must use the group code COA. This rate is good for three days before and three days after, but will only be offered until May 18<sup>th</sup>, 2019, so call early. After that date, rooms will be given only if available.



South Seas Plantation Island Resort

José and Marcus Coltro



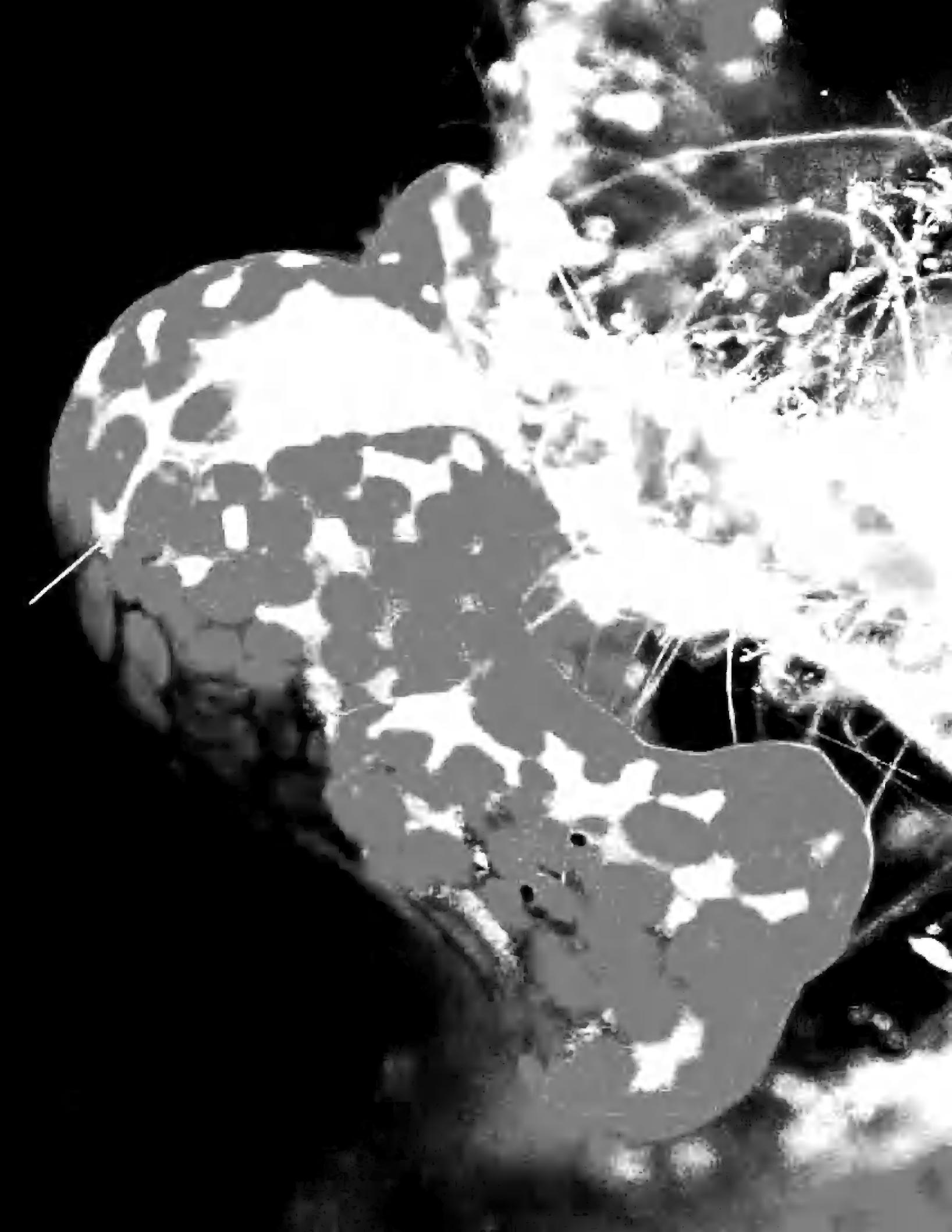
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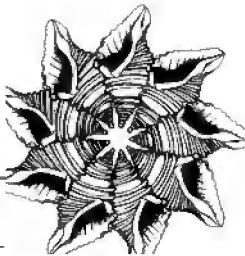
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# CONCHOLOGIST



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# CONCHOLOGISTS OF AMERICA, INC.



In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world. In 1995, COA adopted a conservation resolution: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

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Front cover: *Lyria (Indolyria) cloveriana* Weaver, 1963, at 150 feet depth off of Sri Lanka. Photographs by Charles Rawlings.

Back cover: *Malea pomum* (Linnaeus, 1758), 60 feet depth, off of Sulawesi, Indonesia. Photographs by Charles Rawlings.

Both covers are courtesy of frequent contributor, Charles Rawlings. See his article on yet another photographic expedition on page 28. This time he searches Philippine waters for slit shells. An interesting story of diving off Balut Island with the superb images we have come to expect.

**Editor's comments:** Just a few words this time. First, thanks to all of the contributors. I was able to hold a few articles back for the next issue – a real luxury.

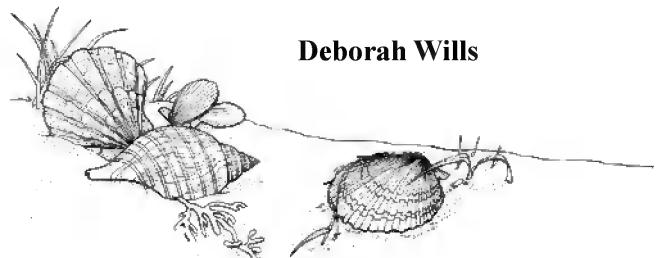
We have some interesting content this go; I hope everyone will find something of interest. Three of our frequent contributors: Simon Aiken, Charles Rawlings, and Ellen Bulger, really sparked up this issue with fascinating content and great images. After flying all over the globe for 25 years in the USAF, I find it quite comforting to sip a hot cup of coffee or a cold mixed drink, while reading about their exploits chasing down shells. The scenery is gorgeous, the adventures notable, but the grit and grime found behind the scenes of many nice specimen shells are gladly left to them.

Speaking of adventure, the 2019 COA Convention is almost upon us. If at all possible (assuming any rooms are left), you really need to make plans to spend the later part of June on Captiva Island. It is like a shelling adventure without the bugs and mud. I hope to see one and all at the South Seas Island Resort. As a penultimate reminder (the final one is on page 22), nominations for the COA *Neptunea* Award will close out on 15 April. Know someone deserving of recognition? Submit them now!

### In memoriam:

Charles "Charlie" F. Sturm – (p. 40)

Fredric Weiss – (*American  
Conchologist* vol. 45, no. 1,  
March 2017, p. 38)



Deborah Wills

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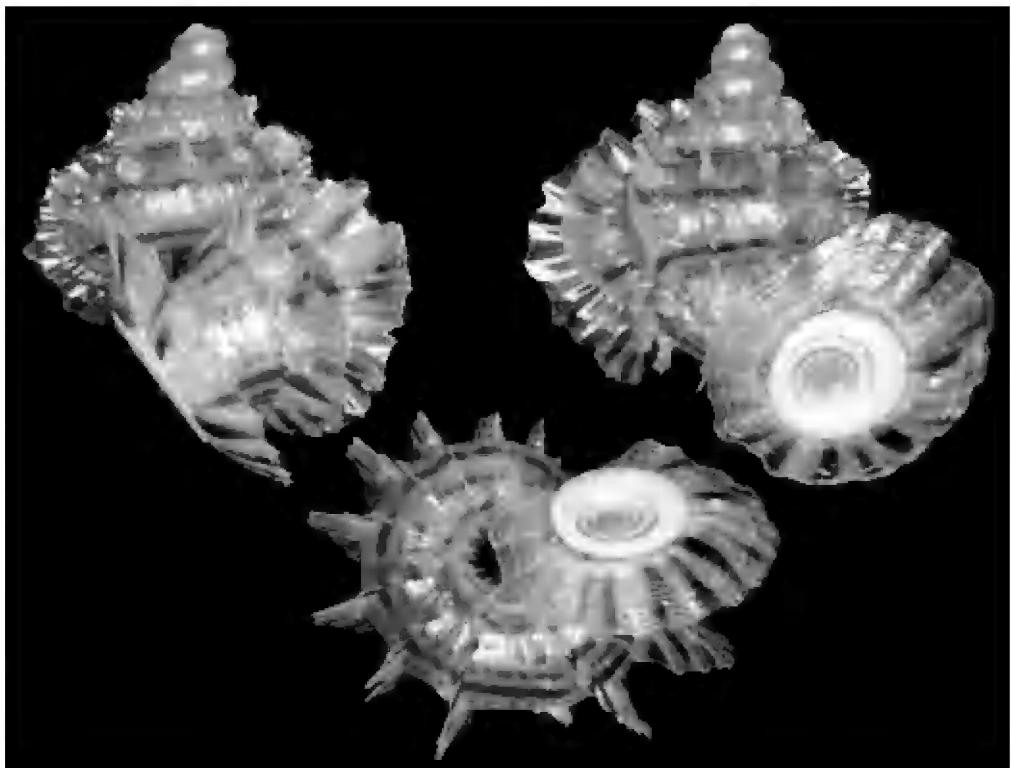
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# Kingdom of the snowflake snail

Simon Aiken

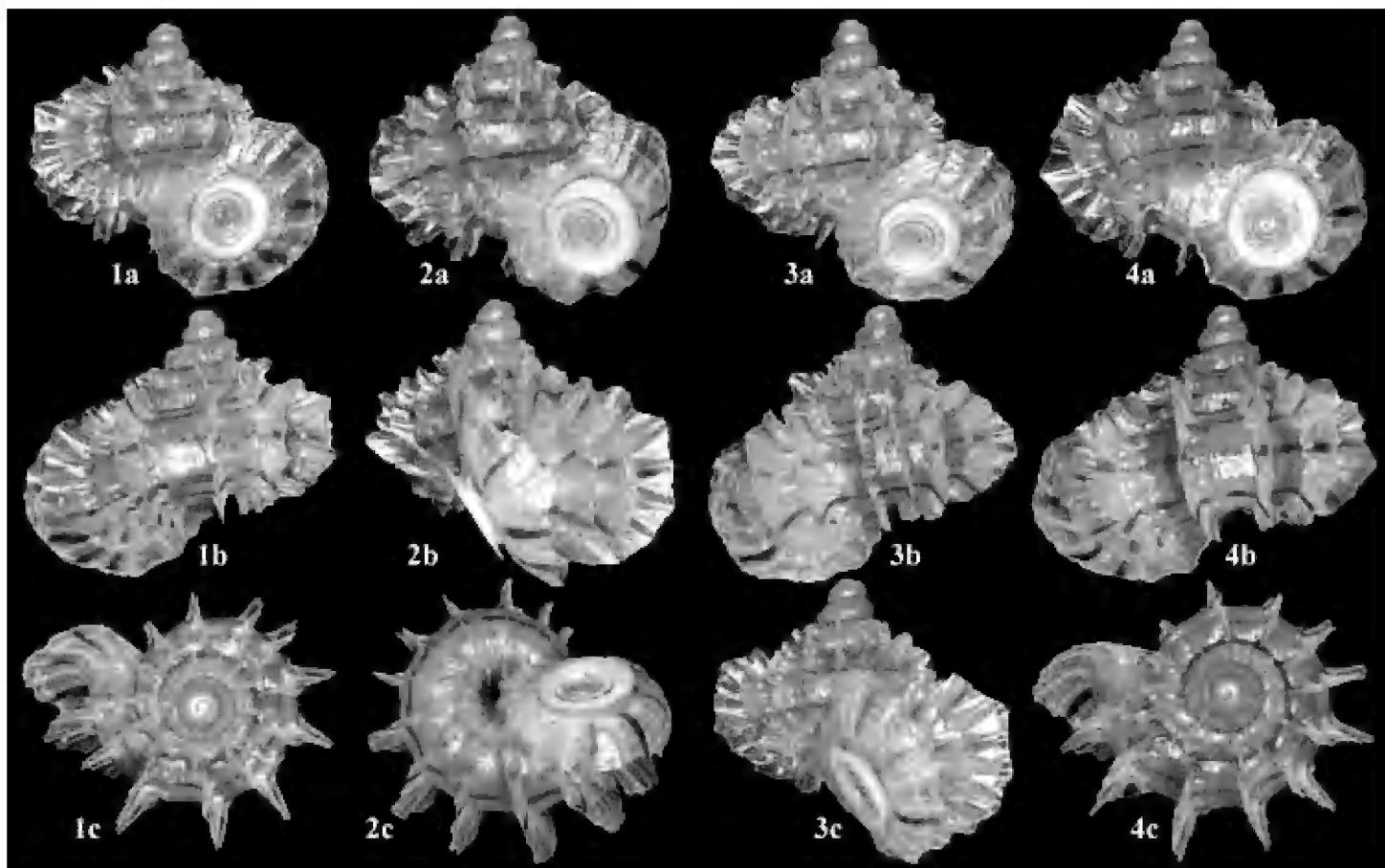


I am privileged to have collected what is arguably Cuba's most beautiful landsnail: *Blaesospira echinus infernalis* de la Torre & Bartsch, 1941 (illustrated on the covers of *American Conchologist* December 2008, 36: 4). Snails of this family, the Annulariidae, have successfully exploited calcareous habitats throughout the Antilles, while their close relatives the Pomatiidae have been equally successful in Madagascar. Cuba may boast the highest number of Annulariidae species, but the nearby island of Hispaniola also has many exquisite endemics. As in Cuba and Jamaica, the Annulariidae exhibit a very high degree of speciation, and have an ability to exploit relatively sparse calcareous outcrops. Hispaniola's answer to the spectacular sculpture of *Blaesospira* is, surely, *Meganipha rhecta* Thompson, 1978. I was fascinated by the specialization of its habitat, the difficulty in accessing the locality, the fragility of the shell, and the fact that such an unforgettable creature could have gone unknown to science until relatively recently. I wanted to become one of the handful of people who have observed this unique mollusk – known to English-speaking collectors as the “snowflake snail”.



*Meganipha rhecta*, the snowflake snail, greatly magnified from its actual size of 9.2mm (one of the larger specimens found).

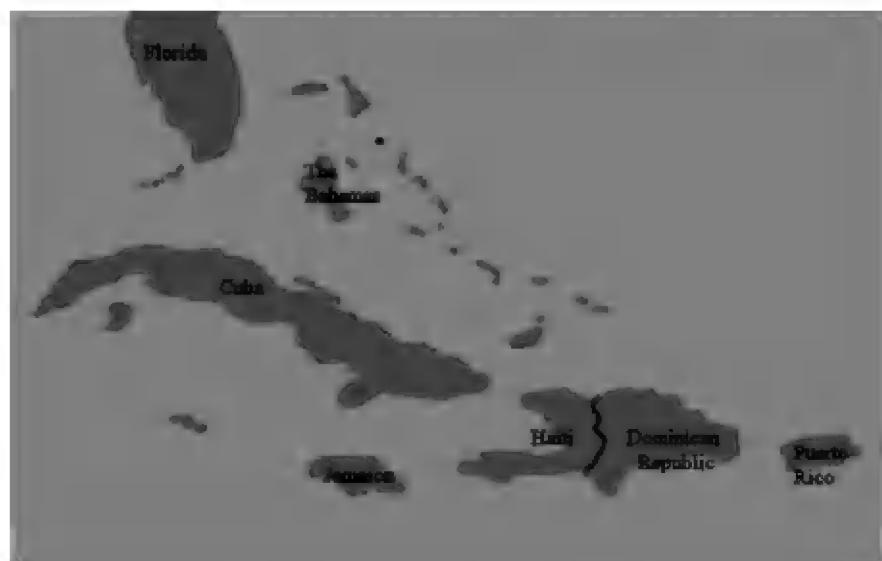
Hispaniola consists of Haiti (in the west) and the Dominican Republic (east). Due to a complex geopolitical history, older molluscan literature often refers to the whole island as ‘Hayti’ or, even more confusingly, as ‘Santo Domingo’ (now the capital city of the Dominican Republic).



Four specimens of *Meganipha rhecta* (1a: 8.7mm, 2: 8.7mm, 3: 8.8mm, 4: 9.7mm). The varices are so delicate that the shells cannot be handled with forceps. So far, it is the only member of genus *Meganipha* Thompson, 1978. Although no known species resemble it, the operculum is typical of family Annulariidae.

Bartsch (1946) was aware of c. 70 Annulariidae species from the island; however, Bartsch's geographical coverage was 'patchy' at best, and concentrated on a few eastern localities (Watters, 2012). Often the type localities are poorly defined because of the ambiguity of old labels. Many areas of Hispaniola are relatively unexplored by malacologists – and are rather inaccessible. There is considerable tourism in the Dominican Republic, but fortunately it is concentrated in a few beach resort areas. This leaves exciting prospects for exploration in the mountainous interior.

Sadly, Fred Thompson died at his Florida home just a few months before I visited the mountain home of his snowflake snail. He cites the type locality as Loma del Puerto – a mountain range in the central north of Hispaniola, rising 930m above sea level. The several intersecting ridges of Loma del Puerto still receive no tourists. There is sparse farming at the lower altitudes, and zero infrastructure for visitors. There are limestone outcrops at the top of the ridges, but the limestone is not widespread and much of it



is completely inaccessible due to the dense forestation. My 'quest for snails' in Loma del Puerto became a 'quest for limestone'; I found very isolated outcrops that apparently sustained populations of snails, especially the Annulariidae.

The geography combined with the very humid climate creates a 'cloud forest' at the top of Loma del Puerto.

The photo behind the title of this article shows thick cloud rolling over and down Snowflake Ridge, which is very typical for an early morning in rainy season. This exceptionally humid atmosphere promotes the growth of mosses and moulds on the rocks. Such is the very specialized habitat of *Meganipha rhecta*.

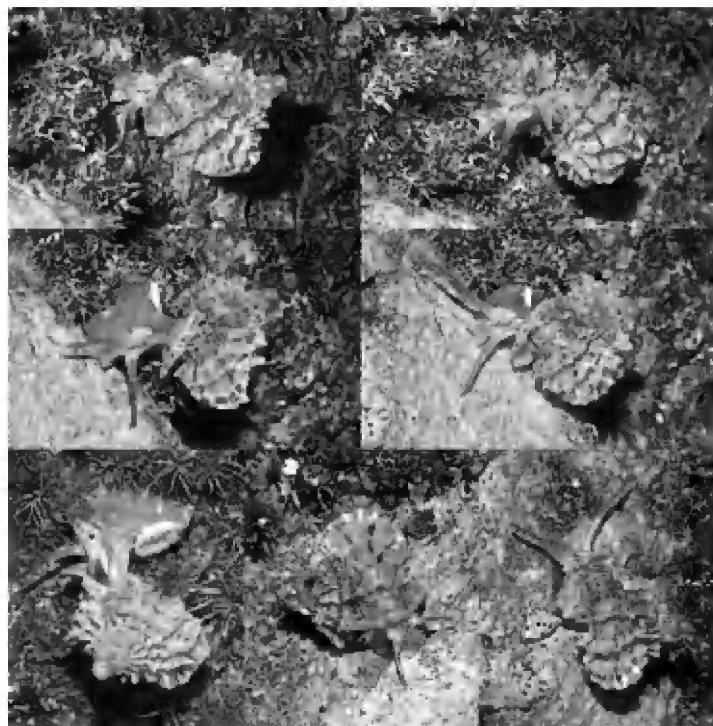
It took me five days – and numerous false starts – to access the ridge on foot. My insistence on marching up and down steep hills every day was observed with quiet bemusement by the few local farmers. I located four colonies of living *Meganipha rhecta*, within c.600m of each other. Given the length of the entire ridge, I believe there will be other colonies as well, but a complete traverse of the ridge is impossible. The first DNA analysis of the species is currently underway (G. Thomas Watters, personal communication).



A ‘mini-mogote’ at 800–820m altitude on Snowflake Ridge; home to a colony of *Meganipha rhecta*. The steep bank leading up to it is covered in dense vegetation, making it very hard to access. The snails are typically seen on rock overhangs.



Snowflake snails are well camouflaged in the habitat and easily overlooked. This is how an actively moving specimen appears (in the center of the photograph). (Notice that the snail’s tentacles are extended.) The colorful moulds and mosses on the rock are consistent with Thompson’s original description of the habitat. I took this photograph during a violent thunderstorm, during which I sought shelter in a small cave.



These are the first photographs of living *Meganipha rhecta*. Despite their extreme fragility, snowflake snails are surprisingly nimble movers. In the wet conditions when I observed them they were very active. Fred Thompson’s original description states that ‘occasional’ specimens may have five reddish-brown spiral bands. Every specimen I observed clearly displayed such bands. This slight discrepancy may be because Thompson was mainly observing dead-collected material.



Mating pairs of *Meganipha rhecta*, on Snowflake Ridge. The unusually high humidity (and high rainfall) at the top of the ridge may affect the behavior of the resident snails. This rather peculiar micro-climate makes an interesting comparison with Jamaica’s ‘Cockpit Country’, where the topography creates exceptionally high humidity and associated diversity of snails in the depressions.

(right) The far western end of Snowflake Ridge is easier to access and is grazed by cows. Here, I found no evidence of *Meganipha rhecta*, and there are no 'minimogotes.' On the other hand, the very sparse limestone rocks support the rare species, *Rolleia oberi* Watters, 2010, *Parachondria trachyderma* (Pilsbry, 1933), the unusual neocyclotid *Crocidopoma floccosum* (Shuttleworth, 1857), and also several widespread pulmonates such as *Cepolis monodonta* (Lea, 1831). In this photo (taken from 805m altitude), the locality of *Meganipha rhecta* is just visible through the clouds (background, left).



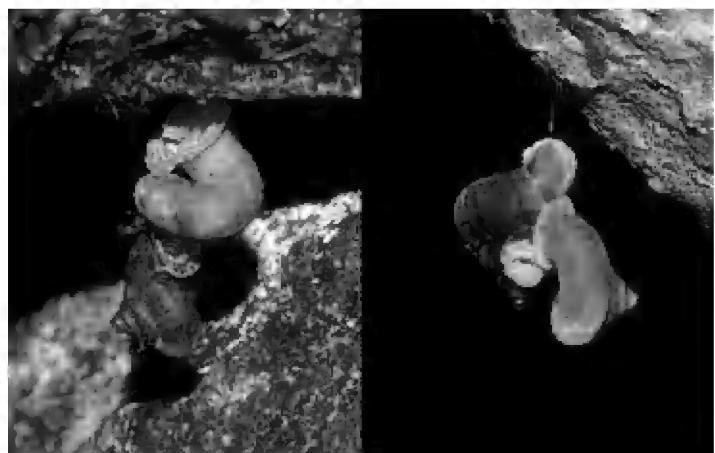
A guilty face? This bark anole (*Anolis distichus ignigularis* Mertens, 1939) lives in the middle of a colony of snowflake snails. Quite possibly this individual lizard is their main predator. It is unusual however to observe dead snowflake snails, probably because the shells are so fragile that they soon disintegrate after death.



*Rolleia oberi* exists as two very distinct color forms. Each specimen illustrated is 9.4mm. The species was described solely from dead-collected and rather eroded shells (Watters, 2010).



At the site of one of the *Meganipha rhecta* colonies, I was fortunate to find live specimens of *Leiabottella soluta* (Pfeiffer, 1852). The type material was dead-collected, thus obscuring the beauty of this species. It lives buried in the soil underneath rocks, making it laborious to find. (Sizes: 13.2mm, 13.1mm.)



Is the color variation in *Rolleia oberi* (shown here mating) an instance of sexual dimorphism? My observations were that all 'couples' consisted of opposite colors. Anatomical work is underway to clarify this.



(left) In my “quest for limestone” I encountered a single house-sized boulder on a slope adjacent to Snowflake Ridge. Five hours examining this potential habitat revealed a few specimens of a delicate *Rolleia* species (center and right), apparently surviving in only one dark fissure, which was just large enough to walk through (sizes: 7.7mm, 9.2mm, 9.5mm, 8.1mm). This species is now being described. Several other (smaller) limestone rocks in the area showed no evidence of other colonies, however. This is a fascinating example of a micro-habitat; the species may have the narrowest range of any known annulariid.

Perhaps Hispaniola cannot match Cuba’s incredible diversity of operculate landsnails. But the combination of relative inaccessibility and highly localized species distribution makes Hispaniola a rewarding destination for the student of malacology. No doubt many new terrestrial species await discovery. Maybe Hispaniola’s densely forested mountains hide another new species that can match the exquisite delicacy of the snowflake snail.

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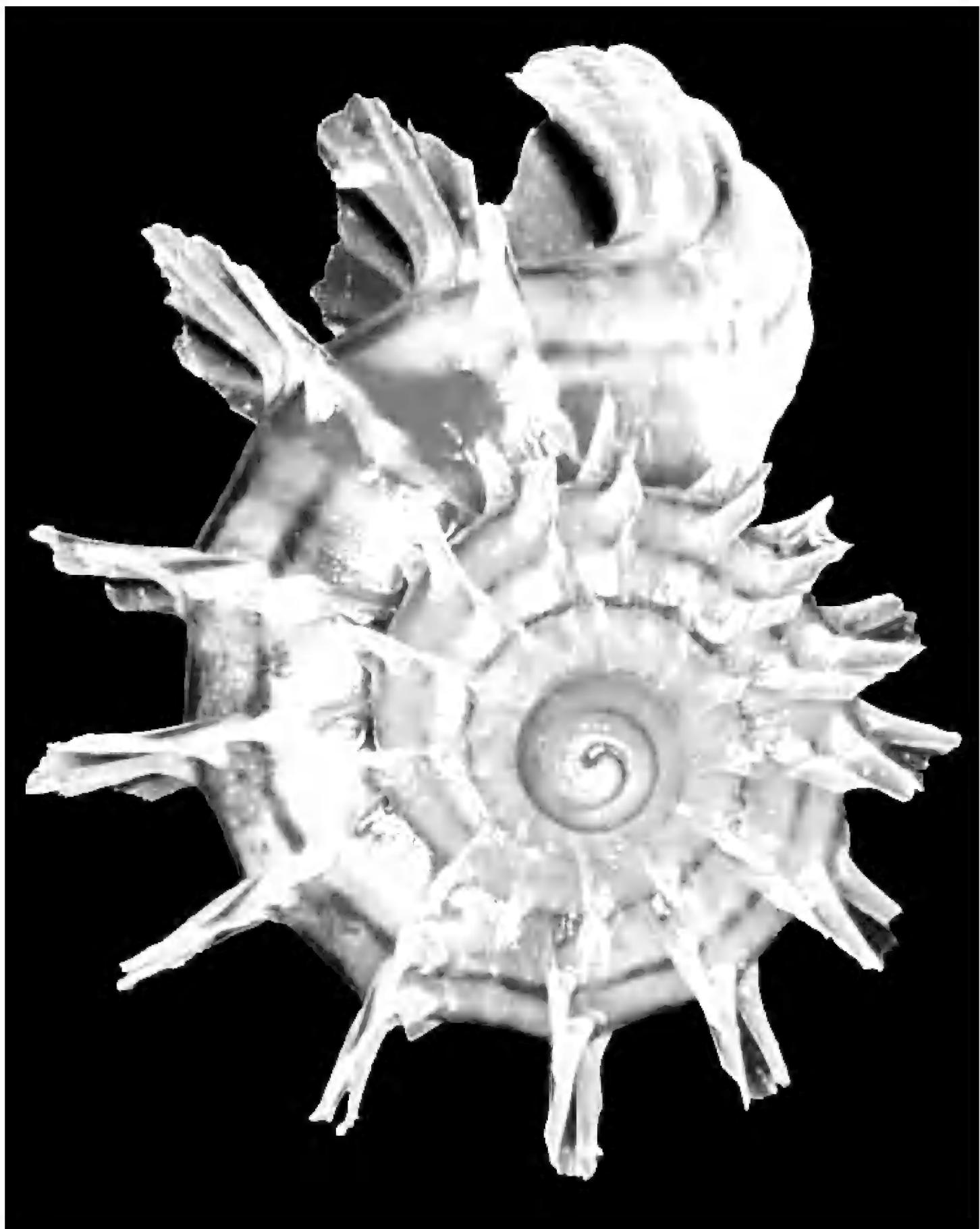
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I thank Dr. G. Thomas Watters of Ohio State University for his constant encouragement and for his advice on collecting in Hispaniola. All photos are © Simon Aiken.  
 simonaiken@btinternet.com  
 www.simons-specimen-shells.co.uk



A lucky find: a hyperstrophic specimen of the *Rolleia* sp. (8.2mm). The early whorls are coiled normally, but the body whorl has reversed direction towards the spire. Sometimes such specimens are termed ‘pseudosinistral’, because they appear at first sight to be completely reverse-coiled.

(opposite page) An breath-taking example of Hispaniola’s *Meganipha rhecta* (8.8mm), the snowflake snail.



# A shell club member's story

## Jonathan Galka

My name is Jonathan Galka. I recently graduated from Yale University, where I studied evolutionary biology and the history of science. I am presently on a Fulbright research fellowship in Malaysia studying the potential for PrEP (a medication that can prevent acquiring HIV) to benefit particular sexual and gender minorities. My doctoral work, which will be centered in theory and history, will probe the discipline of evolutionary biology and its understandings of symbiosis. In what many call the anthropocene, what does it mean to coexist with one another? Might our definitions be shifting when it comes to thinking about what is a part of us versus what is not a part of us: be they chemicals, viruses, or other organisms entirely? Do these definitions look different when applied to humans or to snails? While in Malaysia, I am also working closely with scientists studying mangrove-dwelling mollusks and near-shore reef ecosystems.

I can trace my interest in the natural world to my membership in the Broward Shell Club. The Broward Shell Club is an organization consisting of both experts and amateurs who are unified in their interest in shells. Interests in the club range from individuals fascinated by the natural history and ecology of shells and the organisms that create them, to people who simply enjoy the ritual of collecting what washes ashore or even making crafts from these found objects. Members gather monthly to enjoy a program by a guest speaker, a miniature flea market, and a raffle. During January, the club hosts a shell show; during March, a shell auction. Year round, members coordinate local shell-tripping trips.

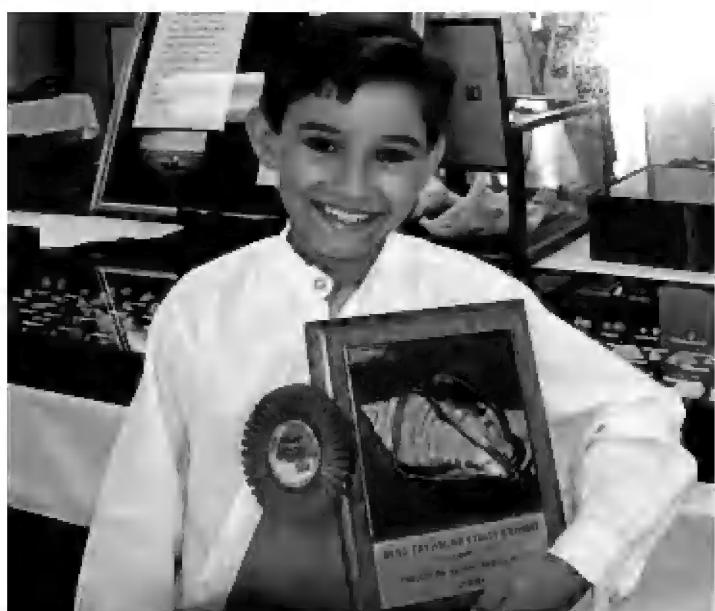
I grew up in the shell club, absorbing information as often as I could from as many people as I could. My years were structured around exhibiting in shell shows and attending meetings and trips. The shell club did more for me in the end, intellectually and personally, than anything else I have experienced. The preoccupation with nature that the club instilled within me drove me to research fish in the Amazon in high school, it drove me to finish both of my majors at Yale, and it compelled me to write a thesis on deep-sea hydrothermal vent mollusks. This is all to say, I see the shell club is a testament to the spectacular value of not only citizen science, but also the simple persistence of passionate people extending and translating that passion into something legible to, and shareable with, others.

It warms my heart to know that the club continues to grow in new membership, especially in what feels like a precarious environmental moment, both in Florida and around the world. It especially thrills me to see parents bring wide-eyed children to shows and meetings, as mine once did. Children, I think, are naturally curious about the world around them, and the shell club is one of those rare venues where that curiosity can be affirmed and sustained.

Shells were, for me, the beginning of all my natural curiosity- something I have returned to time and again. It is my hope that the club continues to grow and thrive and influence new members both young and old, because once upon a time I was an impressionable three-year-old, bursting with excitement, box of shells in hand, ready to know all there was to know about the world around me; and the members of the Broward Shell Club were there to teach me.



**Jonathan's first shell show in the Broward Club – and a couple of awards.**



**Branching out a bit, here Jonathan walks away with a couple of awards from a Treasure Coast exhibit.**



Jonathan Galka in Guyana, researching fish in the Amazon and its tributaries.

More shell show awards...



Jonathan at his Yale graduation with his parents, Michael and Maria Galka.

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# Mysteries of Socotra Island

## Thomas Eichhorst



**Socotra Archipelago, with the large island of Socotra and from west to east the smaller islands of Abd al Kuri, Samha, and Darsa. Image from Wikipedia Commons, by Oona Räisänen (Mysid).**

Have you ever heard of Socotra Island? Well, I had never heard of it until brothers José and Marcus Coltro at Femorale ([www.femorale.com](http://www.femorale.com)) recently offered for sale a couple of small black and white striped land snails (8-10mm) from Socotra Island, "...an inaccessible place..." Having no knowledge of Socotra Island, I looked it up. Inaccessible! I guess. Also fascinating, complex, endangered, and what one source described as, "Socotra, jewel of biodiversity in the Arabian Sea... Left in mid-ocean after the African and Arabian land masses split 20 million years ago, Socotra became a cradle of biodiversity rivaling the Galapagos and Mauritius. All of its land mollusks, 90 percent of its 30 reptile species, and a third of its 900 plant species are found nowhere else. At least six of its 181 bird species are endemic." (FACTBOX-Socotra) All of this on an island only 82 miles long and 32 miles wide.

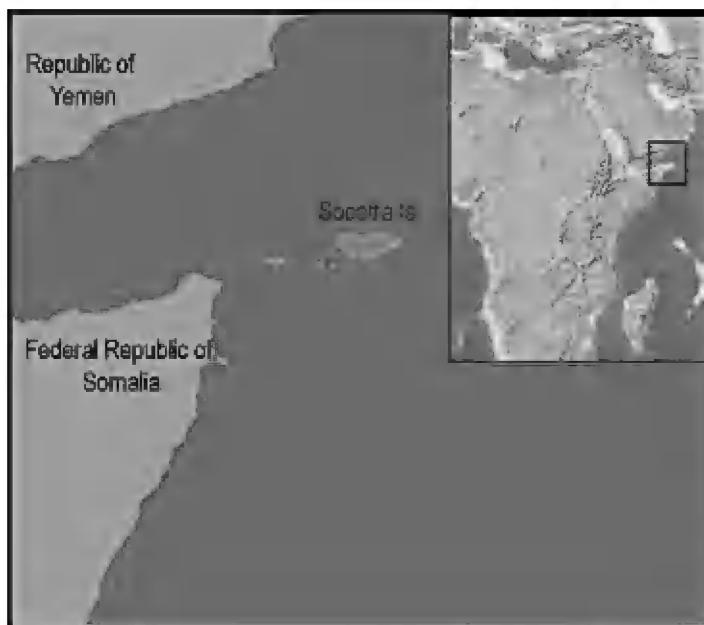
Of course I bought the two offered shells, *Achatinelloides tigris* and *Achatinelloides zebrinus*, and then proceeded to find out what I could about these endemics and the island they inhabit. My first stop was the World Register of Marine Species (WoRMS), where I found out *A. zebrinus* is considered a junior synonym of *A. tigris*. Not the best news, but both are found in the same habitat and even though they look a bit different from each other, Neubert (2005) found various stages of intergrades between the two morphs. Using WoRMS I also found 14 species (and one subspecies) listed in the genus *Achatinelloides* (over half of which are found on Socotra Island), one of 24 genera in the family Cerastidae. *Achatinelloides* are typically found in the lowland arid areas of the island and can be found estivating in rather large clumps on the endemic trees of the island.

### ***Achatinelloides* species as found on WoRMS:**

*Achatinelloides acutus* (E.A. Smith, 1897)  
*Achatinelloides balfouri* (Godwin-Austen, 1881)  
*Achatinelloides fuscoapicatus* (E.A. Smith, 1899)  
*Achatinelloides gollonsirensis* (Godwin-Austen, 1881)  
*Achatinelloides guillainii* (Petit, 1850)  
*Achatinelloides hadibuensis* (Godwin-Austen, 1881)  
*Achatinelloides homhillensis* (E.A. Smith, 1899)  
*Achatinelloides longiformis* (Godwin-Austen, 1881)  
*Achatinelloides pauxillus* (E.A. Smith, 1899)  
*Achatinelloides samhaensis* Neubert, 2002  
*Achatinelloides socotorensis laevior* (E.A. Smith, 1899)  
*Achatinelloides socotorensis socotorensis* (L. Pfeiffer, 1845)  
type - as *Bulimus socotorensis*  
*Achatinelloides subtruncatus* Neubert, 2005  
*Achatinelloides tigris* (Godwin-Austen, 1881)  
*Achatinelloides vandammei* Neubert, 2005

So, back to Socotra Island. There are any number of interesting things about this island, but let's start with appearance. To get a real feel for Socotra Island (actually an archipelago of four islands, but three of the four make up only 5% of the total landmass, with all but about 100 people, of a total of 60,000, living on the main island), take a look at the YouTube video titled, "The Socotra Island - the Most Alien-Looking Place on Earth" ([www.youtube.com/watch?v=c\\_2h6ee\\_-m0](http://www.youtube.com/watch?v=c_2h6ee_-m0)). Watching this video, it can indeed seem that some of the images are otherworldly.

Socotra Island (سقطرى or سقطراء in Arabic, *Suqutra* in Arabic, *Suqadara* in Somali, also sometimes listed as *Soqotra Island*), is



**Socotra Island has several water features. Here Wahid Qahtan flows between stark, eroded cliffs. Image from Wikipedia Commons.**



**Central Socotra Island showing a portion of Dixam Plateau (with several dragon's blood trees) cut through by the Grand Canyon-like Dixam Canyon. Image by Gerry & Bonni on Wikipedia Commons.**



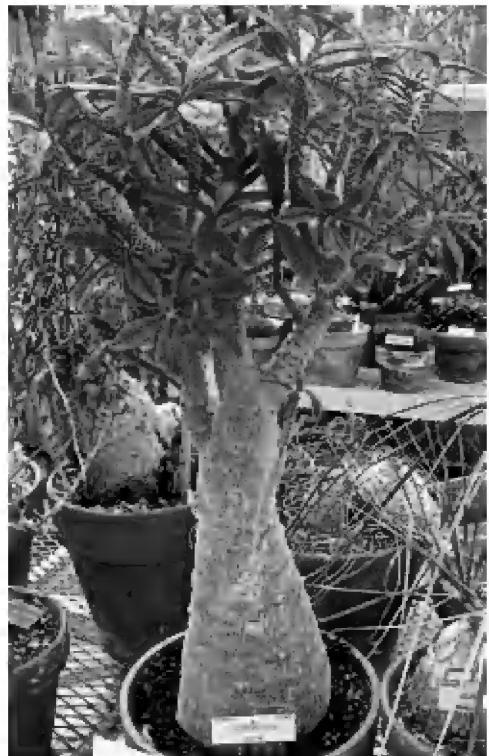
**Halah Cave on east Socotra Island is several hundred meters below the surface. Image from Wikipedia Com.**

located about 150 miles east of Somalia and 240 miles south of Yemen, so is of course, claimed by both countries, though it is generally accepted as part of the Republic of Yemen. Since 2015 it has been the Socotra Governorate, one of several such political divisions of Yemen (think of states). The island inhabitants are said to have been converted to Christianity by Thomas the Apostle in AD 52, who was supposedly shipwrecked there in between trips to India. They were also said to be Nestorians (an Eastern Christianity). With the advent of Islam a few hundred years later, the area eventually came under the Islamic rule of the Mahra Sultanate and Christianity was all but eliminated. In 1507, after a battle to take the port at the capital of Suq, the island was claimed as part of the Portuguese Empire, in part to, "...liberate the island Christians from Islamic rule" (Diffie & Winius, 1977, p. 233). The Portuguese abandoned the islands after only four years due to a lack of available anchorage spots, the stark arid nature of the islands, and perhaps most importantly, several military defeats by the Somali empire of the Ajuran Sultanate. The islands then reverted back to Islamic control under the Mahra Sultanate. The British, through the auspices of the East India Company, attempted to establish an anchorage on Socotra in the mid 1800s, but abandoned this endeavor as an unneeded and expensive complication after they took control of nearby Aden. When the British left Aden in 1967, the Mahra Sultanate and several others were disbanded. Socotra came under control of Communist South Yemen (in the midst of an on-again-off-again civil war with North Yemen), which in turn opened the area to Soviet Union use until the mid 1980s, when the Soviets were busy with a collapsing empire. North and South Yemen were 'unified' in 1990, but conflict in the area continues. Both the United Arab Emirates and Saudi Arabia deployed to the island in 2018 as part of a joint intervention into Yemen, soon returning control of Socotra to Yemen.



**The giant succulent tree on a ridge top on Socotra Island. A long-lived and slow growing succulent. Image from Wikipedia Commons.**

**The giant succulent tree as it appears for sale in plant nurseries world wide. Image from Wikipedia Commons.**



**This cucumber tree is not actually growing out of solid rock, but it certainly appears that way. Image from Wikipedia Commons.**

Most of the 60,000 residents of Socotra are of Arabic origin, with a small number tracing their lineage to Somalia and a few to India. Recent archaeological findings of Oldowan stone tools dates the earliest habitation of the island to a couple million years ago (Zhukov, 2014). Most modern residents make their living from the sea, with some limited agriculture (dates) and animal husbandry (goats). The island is hot and arid with **average** annual temperatures of 77°F for the lows and 87°F for the highs. That is an annual average high temperature, most summer months are much higher. Rainfall averages less than 8 inches a year with the summer months typically receiving no rain at all. At one time the island was said to have had several large streams and supported water buffalo and crocodiles. That environment has long since given way to dry washes and over-grazed lands, with just a couple of small 'wetlands' remaining. There are several extremely large and deep limestone caverns on the island, as well as a large, deep, rugged gorge (Dixam Canyon). The highest mountain is less than 5,000 feet above sea level and while the island receives some rain almost year round -- it is an arid desert environment.

The varied geography and stark habitats of deep caverns, sheer-walled canyons, rocky hillsides, small swampy areas, and desert beaches is given an other-worldly aspect by some of the endemic plants on the island. A total of 307 of the 825 plant species found on Socotra are endemic (200 pages of listings on Wikipedia at: [www.en.wikipedia.org/wiki/Category:Endemic\\_flora\\_of\\_Socotra](http://www.en.wikipedia.org/wiki/Category:Endemic_flora_of_Socotra)). From various aloes (used in cosmetics and medicinally), to the cucumber tree (*Dendrosicyos socotranus*, with bristle-covered leaves and 30mm yellow flowers), to the Socotran pomegranate

(*Punica protopunica*, said to be the precursor to the pomegranate (*Punica granatum*, the only other member of this genus), to the giant succulent tree (*Dorstenia gigas*, one of which has literally grown as an unusual houseplant [called a succulent fig] in my home for the last decade). To garner the title of ‘giant,’ the succulent tree must have an incredible lifespan, because mine hasn’t grown more than six inches in the last decade.

While these plants and trees are all interesting, it is the endemic Socotra dragon blood tree or dragon’s blood tree (*Dracaena cinnabari*) that seems to stand out and put the finishing touches to Socotra’s other-worldly landscape. This is one of several species in the genus *Dracaena* that grow to tree size, although most in the genera are much smaller. It was originally described by Lieutenant James Raymond Wellsted (1805-1842), a member of the ill-fated East India Company expedition in 1835. He called it *Dracæna draco* (L.) L. (a Linnaean species from the Canary Islands originally named in the genus *Asparagus* in 1762, but then moved to *Dracaena* in the 1766-1768 edition of *Systema Naturae*). In 1882 it was ‘formally’ named *Dracaena cinnabari* by botanist Isaac Bayley Balfour (1853-1922) (Gupta, 2008). The name dragon’s blood is because the sap of this tree is blood-red. The sap has been used variously as a pigment for paints and dyes, a wound astringent, a stimulant, a varnish for high-end violins, a glue, and in witchcraft. The odd shape of the tree with its umbrella-like canopy is said to provide protective shade for the base of the tree, often rooted in poor quality rocky soil. The greatest population of dragon’s blood trees is found in the interior of Socotra in the Diksum Plateau. These trees are slow growing, live for more than 1,000 years, and are vulnerable to environmental pressures. Two cyclones in 2015 and another in 2018 wreaked havoc with the human population of Socotra as well as destroying numerous dragon’s blood trees (Maccarron, 2018).

As previously mentioned, the island also contains endemic reptiles (all of its 29 lizard species, discounting two introduced species), six endemic birds, a single endemic mammal (a bat), and numerous endemic invertebrates (including several spiders and insects, and all of the land snails) (Vasconcelos, et al., 2016). Of course, many of these endemic plants and animals are now listed as endangered. Loss of habitat, introduced species (feral cats, goats, and let’s face it, man), have all taken a toll on the native flora and fauna. The island was recognized in 2008 as a World Natural Heritage site by the United Nations Educational, Scientific and Cultural Organization (UNESCO: [www.en.unesco.org](http://www.en.unesco.org)) and several of its endemic species are listed by the International Union for Conservation of Nature (IUCN: [www.iucn.org](http://www.iucn.org)).

This ends my thumbnail sketch of Socotra Island. An intriguing place, it is called ‘alien’ in much of the literature, but it is not an easy tourist destination. Lodging can be extremely difficult and transportation is quite limited. It is now represented in my collection by two land snail specimens (maybe two species, maybe one). My data base will



A dragon’s blood tree can live for more than 1,000 years and has blood-red sap. Image by Boris Khvostichenko on Wikipedia Commons.



Mineral-laden water in a catch basin. Image from Wikipedia Commons.



An endemic, the Socotra starling (*Onychognathus frater*). Image by Rod Waddington on Wikipedia Commons.



**A swamp with giant succulent trees on Socotra Island – truly an other-worldly appearance.** Image Wikipedia Commons.

simply state “Locality: Socotra Island,” but I will now be able to attach much more to this unassuming name. The next time you read headlines about a certain (unbelievably high) percentage of Americans who cannot place China on a world map, or Iraq, or ... name a country, know that those few of us who collect shells garner the additional benefit of constant geography lessons. When you collect conchological treasures from around the world, with locality being arguably more important than the specimen name, you tend to learn a bit about world geography.

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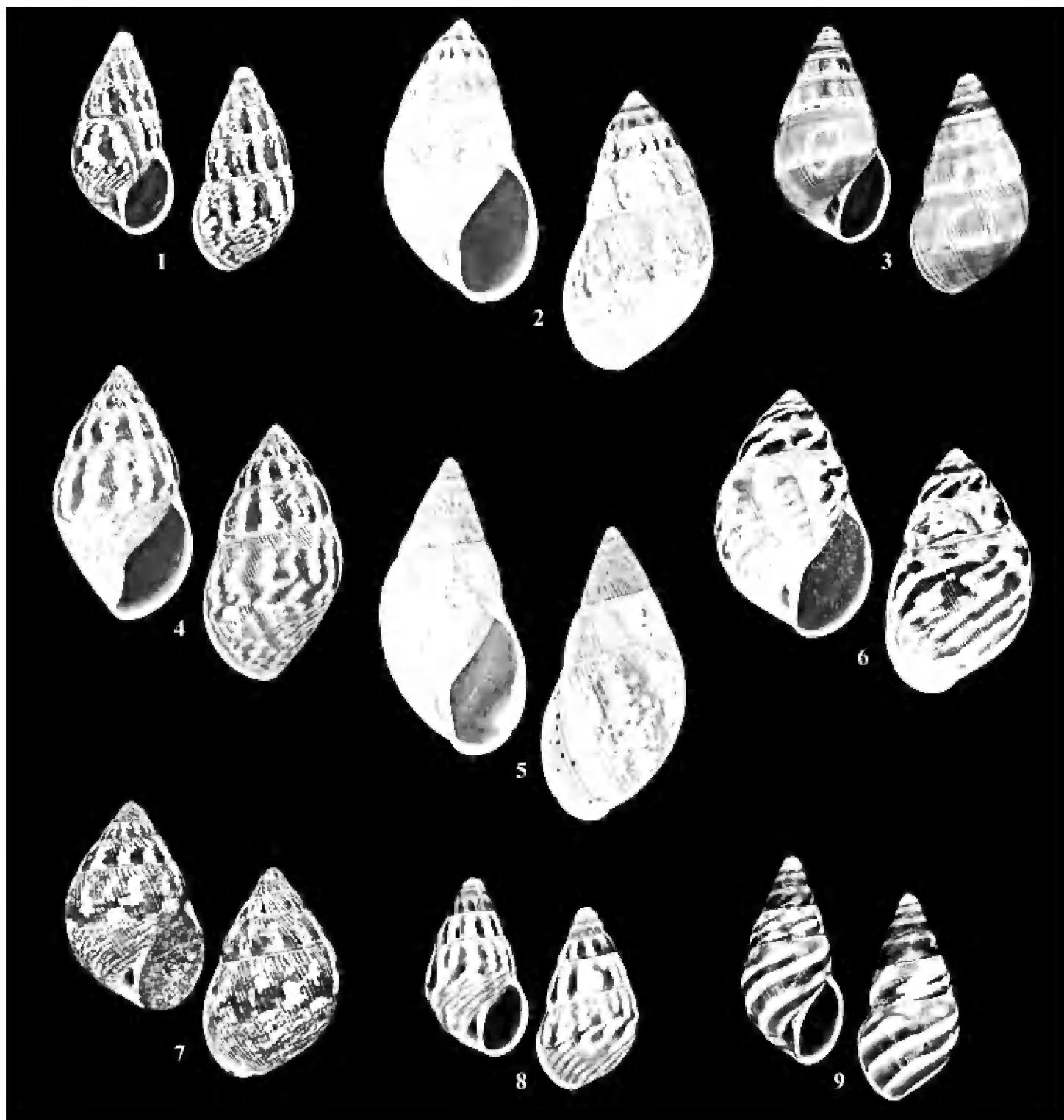
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*Achatinelloides* species illustrated on the Femorale web site (courtesy of: [www.femorale.com](http://www.femorale.com)).

1. *Achatinelloides acutus* (E.A. Smith, 1897) 11mm, 2. *Achatinelloides balfouri* (Godwin-Austen, 1881) 20mm, 3. *Achatinelloides acutus* (E.A. Smith, 1897) 12mm, 4. *Achatinelloides dahamensis* E.A. Smith, 1899, 17mm, 5. *Achatinelloides hadibuensis* (Godwin-Austen, 1881) 21mm, 6. *Achatinelloides homhillensis* (E.A. Smith, 1899) 16mm, 7. *Achatinelloides socotrensis* *socotrensis* (L. Pfeiffer, 1845) 12mm (type - as *Bulimus socotrensis*), 8. *Achatinelloides tigris* (Godwin-Austen, 1881) 9mm, 9. *Achatinelloides zebrinus* (Godwin-Austen, 1881) 11mm.

# Eleuthera shell memories from 2018

Ellen Bulger

[Ed. comments]: COA member Ellen Bulger has written about and shared photographs of her trips to Eleuthera a number of times with readers of this journal. This time she just sent in a few images with comments to share a bit of a 2018 trip. So instead of text about troubles with rental vehicles and trysts with beautiful beaches, bays, and coves in between weather fronts, here are some images of Eleuthera with comments by Ellen. Enjoy.



After two decades of flipping rocks I finally found the measles cowrie, *Macrocypraea zebra* (Linnaeus, 1758).

This nice orange lace murex, *Chicoreus florifer* (Reeve, 1846), is the first we've found in Tarpum Bay since Hurricanes Irene and Sandy went through this area.

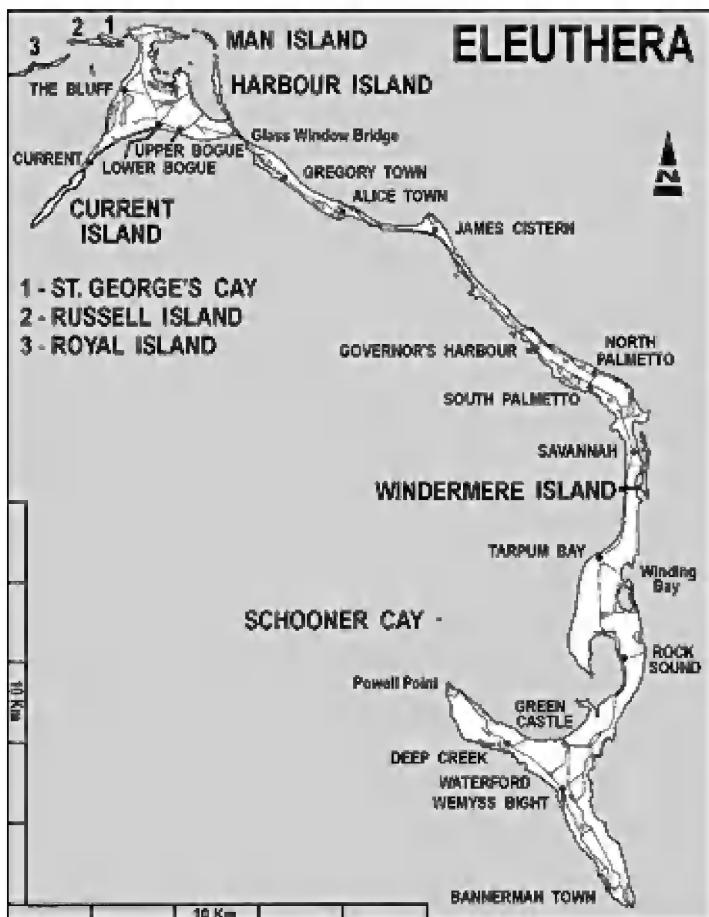


Dale Synder sorts shells on Ethel Knowle's cottage steps. Not a bad way to pass an afternoon.

(left): The 'usual suspects' from Islandia Beach. A nice assortment of sunrise tellins, *Tellina radiata* Linnaeus, 1758.



Brian Taylor (left) and Jim Cordy (right) share the porch with royalty – a queen helmet, *Cassis madagascariensis* Lamarck, 1822, on the left and a king helmet, *Cassis tuberosa* (Linnaeus, 1758), on the right. Sadly Jim passed away this year, but he was collecting in Eleuthera.



Royalty, the king with a purple lip and the queen with an orange lip.



A clay pipe found in Tarpum Bay.



The ubiquitous West Indian top, *Cittarium pica* (Linnaeus, 1758), may be a common shell, but it is always a nice find, especially in condition like this one.



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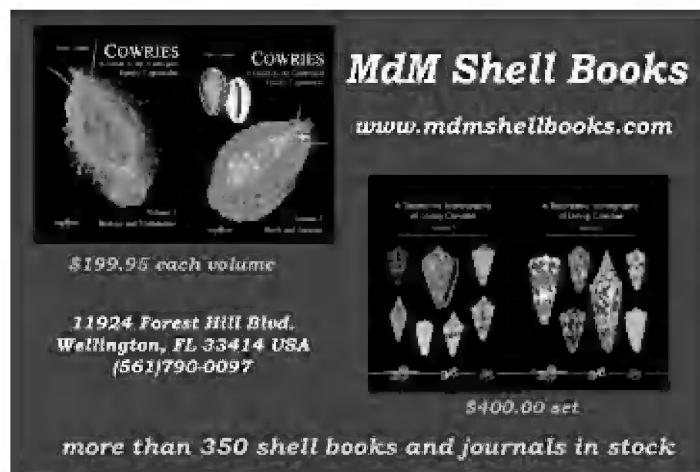
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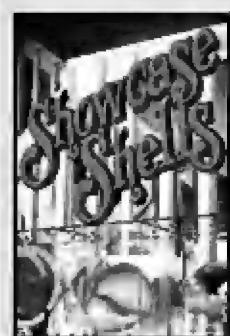
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# COA Academic Grant Report follow up: Florida crown conch (*Melongena corona*) larval characteristics

Alexandra Hooks

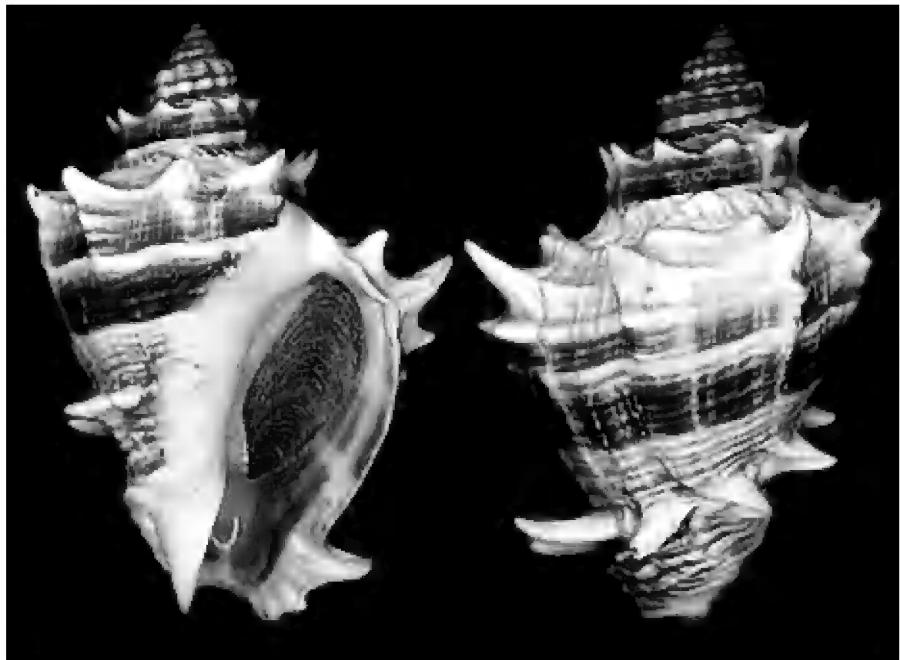
My project formed from the observation that the Florida crown conch (*Melongena corona*) is capable of switching from crawling to swimming with their larval velum for the first three weeks after hatching. As far as I am aware, this pattern of young first crawling away from the egg capsule and then switching back and forth between crawling and swimming is an unusual phenomenon in neogastropods. For the experiment this grant supported, I asked the question: Can the switching between swimming and crawling be induced in the lab by manipulating habitat type, adult food, and larval food? This will provide insight into whether the velum is being used as a mode of dispersal, for feeding of alternative food source (phytoplankton), or a combination of both.

Over the summer, I placed newly hatched offspring into the following substrate/diet treatments and observed their behavior 5 times a day for 30 days.

1. Phytoplankton only (larval food)
2. Oyster (adult food type 1)
3. Sediment from the field containing detritus, changed daily (adult food type 2)
4. No food (control)
5. Quartz (laboratory grade, acts as a substrate control for the sediment treatment)

For the phytoplankton food, I used a mixture of *Rhodomonas* sp., *Thalassiosira pseudonana*, and *Pavlova lutheri*, at 40,000 ml/cell as a mixed diet has been found to promote the healthy growth of filter feeding invertebrates (Strathmann 1987). I measured each hatchling before and after the experiment to see how they grew in each treatment.

This is a more typical *Melongena corona* as seen stranded on the sand at low tide. This species is occasionally sold in the aquarium trade. Image from Wikipedia.com.



*Melongena corona* (Gmelin, 1791) as seen in shell collections. This shallow water dweller is ready available and a popular addition to most collections. Differences in color pattern and shell sculpturer have resulted in many synonyms (see WoRMS: <http://www.marinespecies.org/aphia.php?p=taxdetails&id=420061>). Image of an unusually ornate specimen courtesy of Femorale.com.





*Melongena corona* in between foraging on oyster clumps, Helen Mellon Schmidt Park, Summerhaven, St. John's County, Florida. Courtesy of Marlo Krisberg, <https://olram9.wixsite.com/letstalkseashells/>

Right & below: *Melongena corona* shells quite often serve as hermit crab homes, due in large part to their availability in shallow waters. The color of the shell is fairly consistent, with brown bands on a white background, but can vary from solid white, to a couple of broad brown bands, to numerous thin brown bands. Both photographs from Wikipedia.com.



Left & above: *Melongena corona* shells vary in sculpture from smooth with no spines, to a single row of spines, to numerous rows of spines. This has resulted in several synonyms: *M. altispira* (Pilsbry & Vanatta, 1934), *M. bicolor* (Say, 1826) (juvenile shells), *M. perspinosa* Pilsbry & Vanatta, 1934, and *M. sprucecreekensis* J.K. Tucker, 1994. Both photographs from Wikipedia.com.

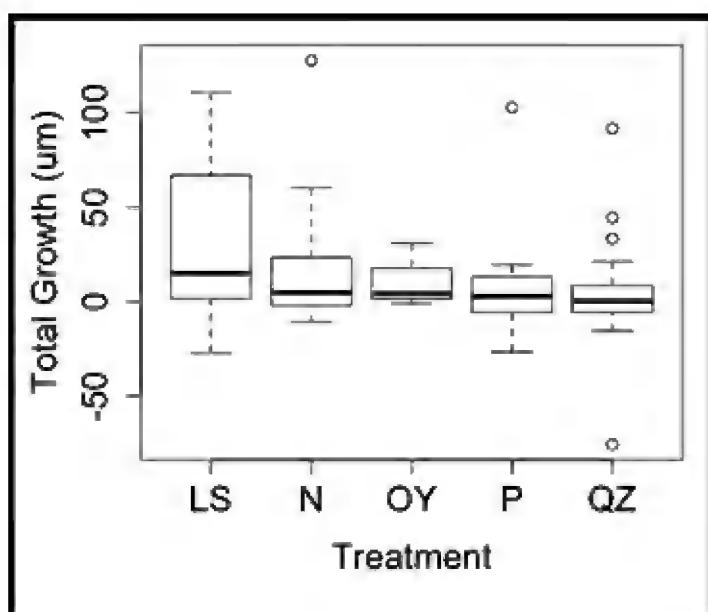


Figure 1: Shows total growth of hatchlings kept in different diet treatments for a total of 30 days. LS=live sand collected from the field, N=nothing (control 1), OY=Oyster treatment, P=Phytoplankton treatment, QZ=Quartz treatment (control 2).

From that experiment, I found no growth in the controls (no food and quartz treatment, no growth in the phytoplankton, and some growth in the live sediment treatment (Figure 1). While the live sediment treatment had some growth, it was not significantly different from the rest of the treatments due to its high variance. It is unclear if the hatchlings are able to consume detritus in the live sediment. Unfortunately, the oyster treatment was not conducive to experimental conditions as protist thrived with oyster present and caused almost absolute mortality in the oyster treatment.

Swimming behavior, however, showed that there were twice as many incidences of swimming in the nothing treatment than in the live sediment treatment and more than twice as many compared to the phytoplankton and quartz treatment (Figure 2). This may indicate that these hatchlings do use their velum for dispersal into more

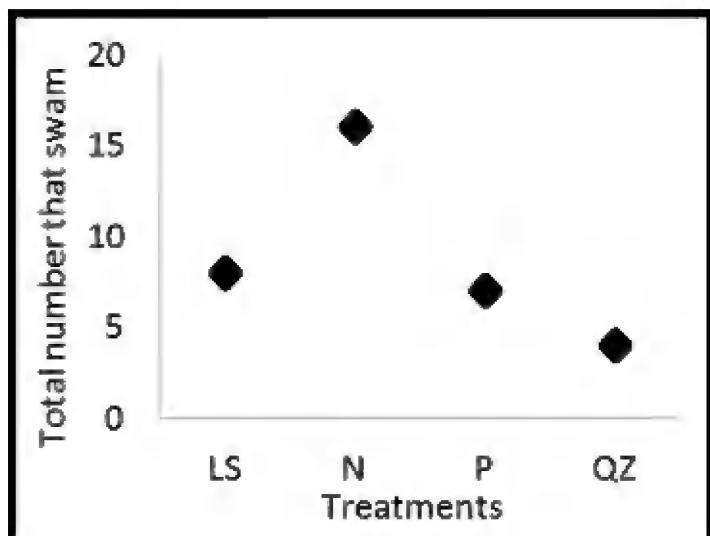


Figure 2: The total number of incidences of swimming by treatment over a 30-day period. Treatments include: LS=live sediment, N=nothing (no food control), P=phytoplankton, QZ=quartz (no food, substrate control). Only three individuals from the oyster treatment survived through the experiment so they were not included in these data.

food enriched environments. These data are still being analyzed before a final conclusion can be made.

Money from this grant was used for aquarium set up and plumbing needs, to cover the cost of travel to the field site, cover the cost of phytoplankton culturing, consumables, caging supplies for field collections, and containers for offspring observation.



*Melongena corona* with several egg cases. Photograph from Wikipedia.com.

## Florida's *Drymaeus multilineatus* (Say, 1825)



*Drymaeus multilineatus* (Say, 1825), 25mm, many-lined *Drymaeus* or lined tree snail, as photographed in October 2018 by Dr. José Leal (Bailey-Matthews National Shell Museum Science Director & Curator). This snail was collected for the museum by Lorin Buckner, on Marco Island. The lined tree snail, like most other tree snails, is not an agricultural pest. It feeds on epiphytic growth (algae, fungi, and lichens that grow on trees and shrubs).

The Florida tree snail variously called the many-lined *Drymaeus*, lined forest snail, or lined tree snail, *Drymaeus multilineatus* (Say, 1825), is a relatively common tree snail living in south-southwest Florida and the Florida Keys. It is in the family Bulimulidae\*, one of three tree snail families found naturally on the USA mainland (the others are

Pupillidae and Orthalicidae) (UFL.edu). While limited in North America, the genus *Drymaeus* and family Bulimulidae are well represented in the tropical America's.

Tree snails, such as the lined tree snail, feed on algae and fungi that grow on smooth-barked trees. Thus, far from being an agricultural pest like the common garden

\* The family assignment of many tree snail species has been a contentious issue for as long as the snails have been known. Early works and many today place *Liguus* in the family Bulimulidae, sometimes in the subfamily Orthalicinae within Bulimulidae, and in 2005 in the subfamily Bulimulininae in the family Orthalicidae (Bouchet, et al., 2005), but most recently as two separate families (Bouchet, et al., 2012)! The recent work by Breure, et al., 2010 (not seen), confirmed the monophyletic status of *Liguus* in the family Orthalicidae (González-Guillén, et al., 2017).



*Drymaeus dormani* (Binney, 1857), 15-25mm, photographed by the late Phil Poland, courtesy of Bill Frank, [jaxshells.org](http://jaxshells.org) or [www.jacksonvilleshells.org](http://www.jacksonvilleshells.org).



*Drymaeus dominicus* (Reeve, 1850), 25-30mm, photographed by the late Phil Poland, courtesy of Bill Frank, [jaxshells.org](http://jaxshells.org) or [www.jacksonvilleshells.org](http://www.jacksonvilleshells.org).



Not mentioned in the text is *Orthalicus reses reses* (Say, 1830), 40mm+, similar in general appearance but much larger than the *Drymaeus* species. photographed by Bill Frank, [jaxshells.org](http://jaxshells.org) or [www.jacksonvilleshells.org](http://www.jacksonvilleshells.org).

snail, *Cornu aspersa* (Müller, 1774), tree snails are often beneficial to the trees upon which they feed.

Depending upon which authority is cited, there are two, three, or four native genera of Bulimulidae in the USA: *Rhabdotus*, *Drymaeus*, and sometimes *Orthalicus*, and *Liguus* (see footnote). The last three genera are native to Florida. Of course, Florida's many colorful varieties of *Liguus fasciatus* Müller, 1774 (family Orthalicidae), are certainly the best known of the state's tree snails, but the smaller *Drymaeus* tree snails are worthy of note to collectors. The three species of *Drymaeus* found in Florida are: 1. *Drymaeus multilineatus* with brown axial flame-like stripes on an opaque ivory to beige shell, 2. *Drymaeus dominicus* (Reeve, 1850) with narrow brown spiral bands on a translucent whitish shell, and 3. *Drymaeus dormani* (Binney, 1857) with broad broken brown spiral bands on a white shell. All have shells with various brown markings on white, ivory, or tan backgrounds. Adult *Drymaeus* species are generally in the 25 to 35mm size range while adult *Liguus* exceed that size and are usually more colorful.

*Drymaeus multilineatus* is probably the most common and certainly has a range that far exceeds that of the other two snails. According to the Global Biodiversity Information Facility (GBIF, online at [www.gbif.org](http://www.gbif.org)) this handsome tree snail has been introduced and can now be found, on Guam, the northern Mariana Islands, Mexico, Venezuela, the Bahamas, Haiti, Honduras, Nicaragua, Colombia, Curaçao, and India.

**Breure, A. S. H., D.S.J. Groenenberg & M. Schilthuizen.** 2010. Gondwana revisited: New insights in the phylogenetic relations within the Orthalicoidea (Gastropoda, Stylommatophora) based on 28S sequence data. *Basteria*, 74 (1-3): 25-31.

**Bouchet, P., J.-P. Rocroi, J. Frýda, B. Hausdorf, W. Ponder, Á. Valdés & A. Warén.** 2005. Classification and nomenclator of gastropod families. *Malacologia: International Journal of Malacology*. ConchBooks, Hackenheim, Germany.

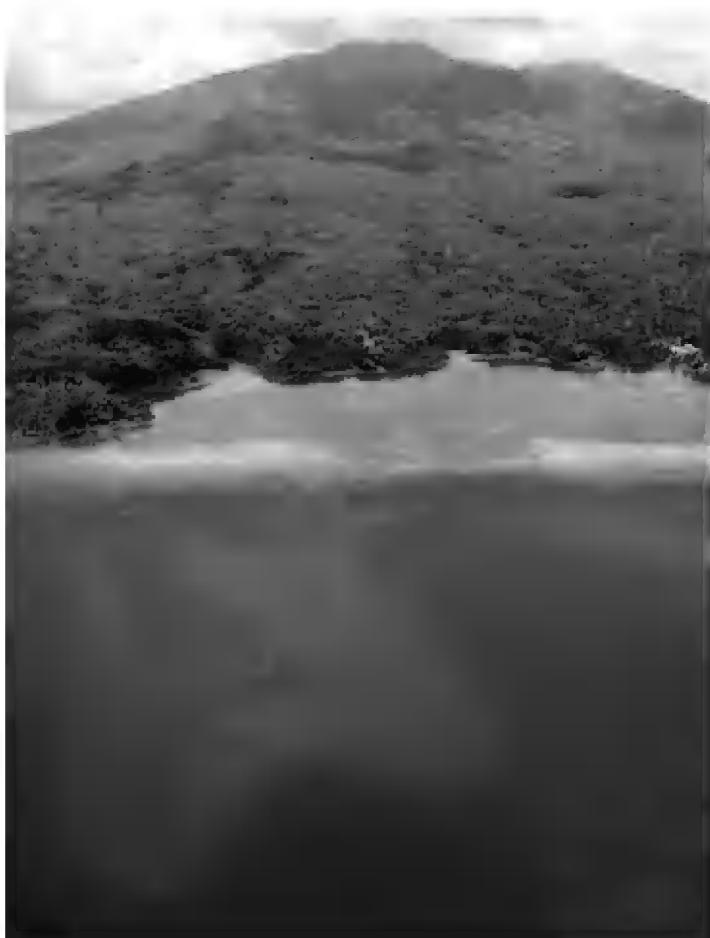
**González-Guillén, A., F. Krull & L.A. Lajonchere-Ponce de Léon.** 2018. *Liguus The Flamboyant Tree Snails*. Instant Publishers.com, Memphis, Tennessee.

**University of Florida.edu.** 2018. Featured Creatures, Entomology and Nematology. online at: [http://entnemdept.ufl.edu/creatures/misc/gastro/tree\\_snails.htm](http://entnemdept.ufl.edu/creatures/misc/gastro/tree_snails.htm)

Thanks to Dr. José Leal for submitting the image of *D. multilineatus* and suggesting a short accompanying text.

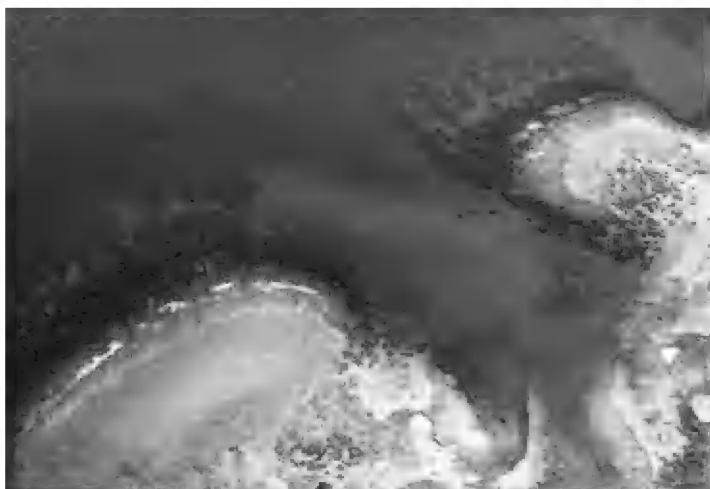
# An adventure in the Philippines: The quest for living slit shells

Charles E. Rawlings, M.D, J.D



**Above:** Balut Island showing the drop off to the deep off shore reefs.

**Below:** A closer look at the shallow Balut reefs.



The sun is bright in the cerulean sky as the water laps gently against my tangle-net fisherman's boat. Slowly but surely we strain against gravity, the water and the weight of the tangle-net as we slowly haul the tangle-net from the depths – 250 meters or 820 feet. I am excited and eagerly watch the contents of the net, mostly shells, as they spill into the bottom of the boat. I spot one, two, three, no, four of the holy grails – the slit shells of Balut Island. Well, that's the way I envisioned it; the reality was something a little bit different. I arrived on Balut Island via a very expensively chartered helicopter accompanied by a police/paramilitary escort. One living *Mikadotrochus gotoi* was alive in a Styrofoam cooler under a wheezing air conditioner. The other slit shells were no longer viable.

So let's start from the beginning. I travelled to the Philippines under the auspices of the Explorer's Club, carrying an Explorer's Club Flag. My goal, my expectations, my hopes, were to photograph as many species of Filipino slit shells alive as possible. As such, I flew from JFK to Istanbul, and then Istanbul to Manila, on Turkish Air. As an aside, their business class is very luxurious and very affordable. I would definitely explore Turkish Air flights to and from any of the South East Asian destinations including Manila, Jakarta, Hong Kong, Bangkok, and Singapore. I arrived in Manila, and met Lynn Murphy, my dive partner and co-conspirator in this endeavor. We over-nighted at the Hyatt Dream City, a 15 minute ride from the airport. The next morning we took the Philippine Air flight to Mactan, Cebu International Airport. As most conchologists remember, Mactan Island, Lapu-Lapu City, was the epicenter of rare shells as little as only five years ago. It was one of Lynn's Holy Grails to dive Mactan, and I certainly wouldn't argue. We arrived and were efficiently transported to the Shangri-La Resort, which housed our PADI diver center – Scotty Watersports. I then started discussing tangle-net fishermen and rare shells, including living slit shells. Come to find out, all of the tangle-net fishermen in Mactan, Bohol, and even Balicasag Island, have become servants of the tourist industry and no longer do shelling via tangle-nets. What I always heard was Balut Island – Balut Island for rare shells, including slit shells, cones, and cowries like including *Lynicina leucodon* (Broderip, 1832) and other rarities.

So, Balut Island. Balut Island is a rather smallish island that lies about eight hours outside of General Santos City in the southernmost part of the southern Philippines

– South Mindanao. What I was told was that no Westerner had returned from the island alive lately: a recent bird watcher had been abducted and never heard from again as well as a politician, who had travelled to the island and was subsequently beheaded. Regardless, the tangle-net fishermen were pulling up slit shells – *Mikadotrochus gotoi* (Anseeuw, 1990), *Perotrochus anseeuwi* Kanazawa & Goto, 1991, *Entemnotrochus rumphii rumphii* (Schepman, 1879), *Bayerotrochus teremachii* (Kuroda, 1955), and *Perotrochus vicdani* Kosuge, 1980. So what did I do? I chartered a helicopter to take Lynn and me to Balut Island; ahead of us Djams and Rogelio Pagabo would pave the way, make contact with their friends in the tangle-net community and hopefully keep us safe. It did take some persuasion to convince Lynn, but I arranged the helicopter and off we went the next morning, well actually two mornings later once we convinced the pilots we could do this.

We left Mactan at 5:50 am (sunrise) and traveled along the island and down the coast of Bohol. We stopped in Ozamiz City, after about an hour and a half for refueling. After refueling we left Ozamiz City, passing Marawi City, on the way. As an aside, Marawi City, has been in the news lately for the Muslim rebel occupation and Filipino Army offensive to retake the city. At that point I learned our pilots were ex-military and had flown this route multiple times, mostly under the cover of night so as to avoid enemy anti-aircraft fire. So, over the mountains and along the coast of southern Mindanao, we flew, hugging the ground. We then stopped in General Santos City, to refuel and then off to Balut Island. It took about 95 minutes of flying time from Gensan to Balut, versus eight hours on a ferry. We landed at the only school's athletic field just a few hundred meters from the dock and were met with a para-military escort to insure our safety thanks to Djams and Rogelio.

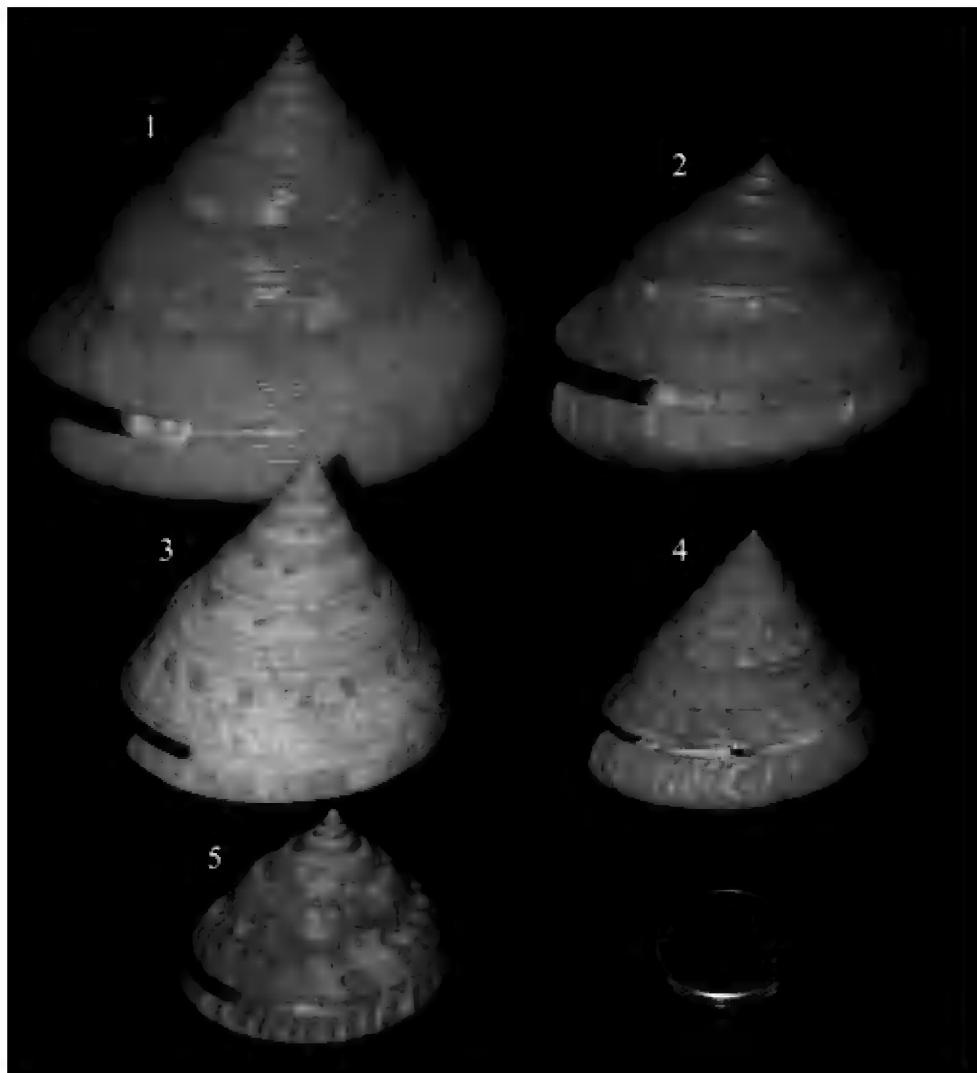
We were quickly escorted into a Toyota Land Cruiser and taken to the tangle-net fishermen. Alas, the only living slit shell was a *Mikadotrochus gotoi*, but the rarities included a *Perisserosa guttata* (Gmelin, 1791), *Conus dusaveli* (H. Adams, 1872), and other incredibly rare shells. Sadly, my vision of slowly raising the tangle-net and seeing living slit shells didn't happen this time, however, the fishermen did have multiple species of slit shells, including *rumphii*, *anseeuwi*, *vicdani*, *teremachii*, and *gotoi*. It seems that for whatever reason, the living slit shells did not survive the capture – except for the *gotoi*. I was able to obtain a photo of living *gotoi*, although the animal was very reluctant to make an appearance. As you can see with these photos, the *anseeuwi* are huge, about 100 mm, the *rumphii* is very colorful, and the *teremachii* does, in fact, live around Balut Island. In summary, I found all five of the living Filipino slit shells around Balut Island, including an amazing array of other rarities; the close-up of *Conus dusaveli* is only one example.



**Balut Island tangle-net fishermen. A friendly bunch and my only means of obtaining deepwater specimens.**



**Our helicopter that got us from Mactan to Balut Island – much quicker than the traditional ferry crossing and as an added benefit we were provided fantastic views of Mindanao from the air.**



Here are the five Balut Island slit shells brought up by deepwater tangle-nets: 1. *Perotrochus anseeuwi* Kanazawa & Goto, 1991, 2. *Bayerotrochus teremachii* (Kuroda, 1955), 3. *Mikadotrochus gotoi* (Anseeuw, 1990), 4. *Entemnotrochus rumphii rumphii* (Schepman, 1879), and 5. *Perotrochus vicdani* Kosuge, 1980. The *Bayerotrochus teremachii* and *Entemnotrochus rumphii rumphii* get much, much larger than the specimens illustrated. And for those holdouts still using *Pleurotomaria* as the catch-all genus, it is probably time to update your database. *Pleurotomaria* is now generally accepted as a fossil only genus. WoRMS lists both *P. anglica* (J. Sowerby, 1818) & *P. concava* Deshayes, 1832 as fossil species in *Pleurotomaria*. There are no Recent slit shell species presently listed in this genus (WoRMS: [www.marinespecies.org](http://www.marinespecies.org)).



While I did find my five species of slit shell on this trip, *Mikadotrochus gotoi* was the only living slit shell specimen I was able to photograph.

For those purists, the tangle-nets are set at a depth of between 250 and 290 meters. The bottom is typically a muddy, sandy, flat bottom, with presumably some coral rubble from the reef wall. The nets are set just off the deep reefs of Balut, a photo of which can be seen here taken from the helicopter. The nets are left in place for between 24 and 48 hours. After that time period, the tangle-nets are retrieved, by hand, and into small banka boats and the shells obtained cleaned and prepped for sale to intermediate dealers such as Djams and Rogelio. As I mentioned, the *anseeuwi* and *rumphii* came up alive, but died after about 12 hours. The *gotoi* lived in a Styrofoam aquarium until I arrived and was able to photograph the living animal. As you can see, these slit shells from Balut are exceptional both in size, shape, condition, and coloring. Once I had photographed all that I could, we were escorted into the Toyotas and then back to the helicopter – a five minute ride at most. I don't mean to make light of the escorts, they probably did keep us alive while we were on the island.

Due to our desire to shell and my photographic interests, we almost always charter a private boat, and on Mactan, this was no exception. Luckily, the proprietor of Scotty's Watersports was amenable so we were able to procure a large banka for a private charter with only Lynn and me. Bernie was our divemaster and could not have been better. The first day and actually every day, we encountered significant winds, but were still able to cross the channel to Olango for some amazing diving.

I jump into the azure ocean on my first dive but without a camera. I was interested in collecting and then photographing. Within five minutes, Bernie and I both spot a very rare Filipino greater blue-ringed octopus, and I have no camera – of course! Well, I ascend back to the boat for my camera while Bernie watches the octopus. He does more than watch it, he catches it and places it into my Tupperware container, which I carry for living shells. I return to the bottom about 40 feet deep and there is Bernie – octopus in Tupperware.

So now the question is how to release the octopus in position for photographs, assuming that it will jet propel itself into the nearest hole in the coral, leaving me only seconds to fire off a few photographs. Bernie and I look at each other figuring that this octopus is gone after we open the



**Our very bold greater blue-ringed octopus, *Hapalochlaena lunulata* (Quoy & Gaimard, 1832), seemed content to pose for photographs. The blue rings warn of the extremely venomous nature of this mollusk.**

lid. We find a smooth place on top of a coral head, I focus and adjust the strobes so if I do only have one shot it will be good, we slowly open the lid, and nothing. The octopus just looks at us from inside the Tupperware. OK, so we slowly tilt the Tupperware on its side. The octopus still looks at us but then slowly and majestically crawls onto the coral head. I immediately take a photo, then another, and then another. The octopus did not hide, it basically posed. After 45 minutes and about 50 photos, I have this one that satisfies me.

Over the course of the next several days, we did several dives in and around Mactan and Olango Islands. Lynn found several beautiful shells, including a giant *Chicoreus torrefactus* (G.B. Sowerby II, 1841), several flawless textiles, cowries, mitres, and several abalones, including *Halotis asinina* Linnaeus, 1758. The diving encompassed both walls as well as typical muck diving sites with algae, rubble, and man-made structures such as tires and concrete blocks. Lynn was gracious enough to let me photograph one of his *Halotis* specimens. These are the photos in this article. I was particularly struck by not only the animal but also the speed of its travels and the emerald green of its shell.



**The Balut Island ferry and a great view of the dock and surrounding shallow water reefs. Our helicopter was definitely the better option.**



**Fish traps off Mindanao Island, set above shallow water reefs.**



**Mindanao Island volcano, a dominate feature of this part of the island.**



**Mindanao Island jungle ridge. The term impenetrable comes to mind.**



*Halgerda batangas* Carlson & Hoff, 2000, is a dorid (superfamily Doridoidea) nudibranch of the family Discodorididae. It is typically 30-40mm in length.

Flooded rice fields on Mindanao Island.



*Phyllidia ocellata* Cuvier, 1804, 30-35mm, one of the more brightly colored reef dwellers. Image from Wikipedia.

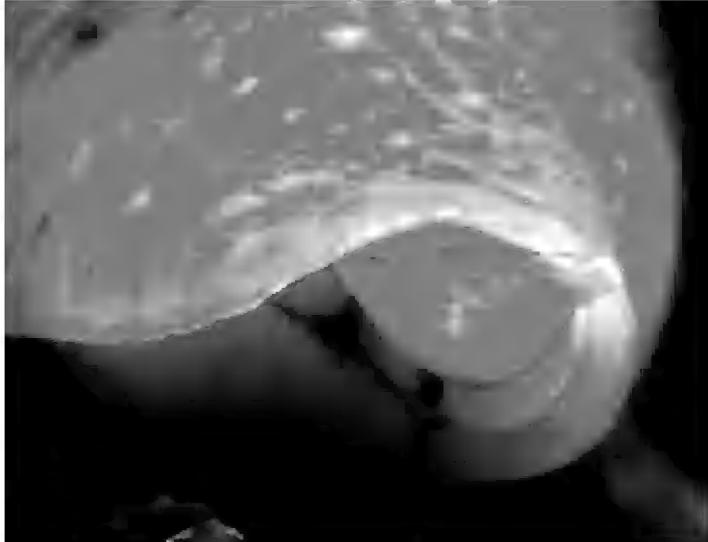
A close up view of the amazing *Phyllidia ocellata*, showing the numerous white tubercles and the orange antennae.



The ass's ear abalone, *Haliotis asinina* Linnaeus, 1758.



The City of General Santos (named for General Paulino Torres Santos (1890 – 1945), Commanding General of the Philippine Army prior to WWII) on southern most Mindanao shows an outrigger traffic jam.



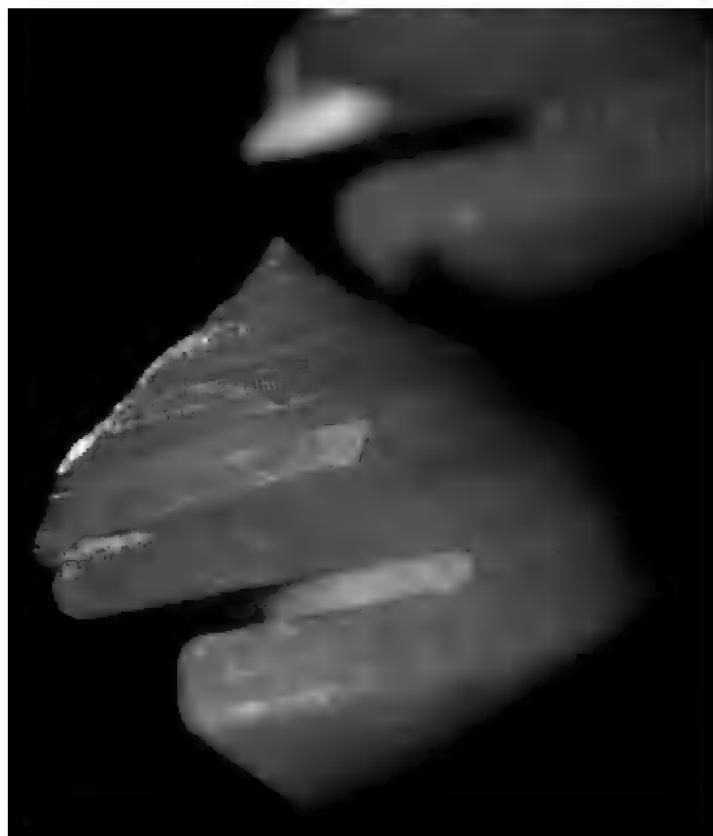
Close up view on an oncoming *Conus dusaveli* (H. Adams, 1872). This beautiful cone may be in your data base as the original *Leptoconus* or *Textilia dusaveli*, but according to WoRMS it is time to change the genus assignment.



The face of *Haliotis asinina*.



An unknown Opistobranch, probably *Haminoea* sp. found in coral and clumps of algae.



*Bayerotrochus philpoppei* Anseeuw, G.T. Poppe & Goto, 2006, photographed at Conchology, Inc., after a wonderful dinner and tour of this grand facility owned and operated by the Poppes. Thank you to our gracious hosts: Guido, Philippe, and Sheila.

Most of these photos are taken with my old reliable set; a Nikon D80 in an Ikelite housing with dual strobes. Each of the strobes has a snoot mounted on it so I can determine the amount and direction of the lighting for each shot. The more I use the snoot to mask the strobe, the more dramatic the lighting and photograph becomes.

For a different type of photography, I will occasionally use the new Olympus TG 5 set on microscope mode with a SOLA video light. This set-up allows me to photograph extremely small subjects in almost a 4:1 format in exquisite detail. On one of my dives I decided to use the Olympus and search for soft coral ovulids. Bernie knew of a wall with soft corals in abundance due to the tidal currents that sweep the wall daily. There, he said, would be ovulids. Well, no, just no. We searched through dozens of soft coral bushes between 70 and 90 feet with no luck. With my computer approaching decompression mode, we rose to the top of the wall and began to notice clumps of algae. Bernie began to explore each clump until he began to wave his arms excitedly. I swam over and looked. Then looked again. Underwater you really can't say "huh"? So I just shrugged my shoulders. Bernie took his pointer and showed me three dots moving in and around the algae. I used the Olympus to focus and, amazingly, small bubble shells sprang into view. Their colors reminded me of Cloisonné.

After some research, it seems that these bubble shells or opistobranchs are in the genus *Haminoea*. They appear similar to *Haminoea cymbalum* (Quoy and Gaimard 1832), but also similar to related but unnamed species *Haminoea* sp. 1 and *Haminoea* sp. 2. They are not exactly the same and could very well be a new species or at least an undescribed species of *Haminoea*.

The article would be not complete without mentioning our meeting with a special family and group of people – the Poppes – Guido, Philippe, and Sheila. We were royally treated to a tour of their facility and twice had dinner with them. Their knowledge and collection is amazing, but more importantly, they are incredibly nice people. The photo of the slit shell *Bayerotrochus philpoppei* was taken at their facility with the gracious permission of Philippe, and no, it was not for sale even though I tried. They did, however, take us diving to one of their favorite spots.

In summary, this trip certainly turned into a Filipino adventure. From a helicopter trip to Balut Island in search of living slit shells to the discovery of a new species and photography of the blue-ringed octopus, this trip was certainly interesting. We didn't meet all our goals and didn't collect as much as we wanted, but we did meet the exceptional Poppes and I am happy with my photographs, plus I was actually able to see the famous *B. philpoppei* slit shell.

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# COA 2018 Convention: San Diego

The San Diego Shell Club hosted the 2018 COA Convention, the third held in San Diego. The first two (1989 & 1995) were in downtown San Diego; this year's convention was held at the Sheraton on Harbor Island, with views of two US Navy aircraft carriers off one side of the hotel and a marina full of sailboats off the other side. San Diego is known for its Mediterranean climate and this meant that **every** day was glorious – weather-wise. The temperatures were perfect for enjoying sitting on your room balcony, eating on the restaurant patio, or walking around the area.

There were several pre-convention field trips and excursions, all well attended and worth arriving early at the convention. The success of the convention was due in no small part to our two co-program directors: David Berschauer and David Waller. Of course, there were any number of people filling the numerous volunteer positions (from a number of clubs) to "get it done." Without them we could not have had a convention.

The slate of presentations was quite interesting and concentrated on West Coast subject matter. The silent auctions and oral auction relied heavily upon the Weiss shell collection and earned COA a nice sum for use in our academic grant program – now awarding \$25,000+ a year. At our closing banquet, member Bruce Neville was awarded the *Neptunea* Award.

Presented here are several images from San Diego (most courtesy of Linda Powers). Hopefully they will remind attendees on some fun times. If you didn't attend, well, just imagine perfect weather, a great venue, fun people sharing your interests, and daily activities centered around shells. If that sounds good, then make plans now because it's on to Captiva (see page 38)!



**Some three-peaters.** Each of these COA members was at all three (1989, 1995 & 2018) San Diego COA conventions. Left to right: Rich Goldberg, Don Pisor, Anne Joffe, Jean Pisor, Phyllis Gray, Alan Gentleman, and Hank Cheney. Image from *The Capsule*, Oct 2018, publication of the Astronaut Trail Shell Club.



**A common or weedy sea dragon** (*Phyllopteryx taeniolatus* (Lacepède, 1804)) at the Birch Aquarium at Scripps Institution of Oceanography. The Scripps houses over 3,000 animals. A great field trip.



**View from one side of the Sheraton.** This looks pretty much like each day we spent enjoying COA 2018.



**The tag team of David Waller (left) and David Berschauer – great effort, fantastic result. Thanks, guys.**



These are the COA members who attended the dinner cruise.



Above: View from the Scripps Aquarium.  
Below: Hugh Morrison offers rarities at the bourse.



Bruce Neville of College Station, Texas, was awarded the *Neptunea* Award for his tireless efforts putting together a comprehensive index of past issues of *American Conchologist* and its predecessor, the *COA Bulletin*. He would be, and was, the first to admit that he did not do this alone. Several COA members volunteered to work up different sections of the index. They included: Amelia Ann Dick, Tom Grace, Harry G. Lee & Ed Shuller.

# COA Convention 2019 – Captiva, Florida

## 17-18 June: Field Trips

## 19-23 June Convention

Anne Joffe

What could be more fun than to celebrate R. Tucker Abbott's 100th birthday and what could possibly be a better location, than South Seas Island Resort, located on the north end of Captiva Island? You guessed it, the 2019 COA convention and meeting.

Field trips on the 17th and 18th will kick off the festivities. All are located in the Sanibel-Captiva area, except for the fantastic trip to see Thomas Edison's and Henry Ford's homes and laboratories in Fort Myers.

On Tuesday evening, the Bailey Matthews Shell Museum will host a reception at 6:00 p.m. This will feature appetizers and drinks, and give you a chance to reacquaint yourselves with the museum and discover the changes under way for the new aquarium project. We need to know how many plan to attend, so be sure to check it off on the registration form if you plan on attending.

Opening day is Wednesday, the 19th, with some surprises throughout the day. The welcome party that evening will begin with something to help kick off the birthday events. A number of silent auctions are planned, including one during the welcome party. Dress code for the evening is shell shirts, like Tucker used to wear, or any festive shell top. This will be a fun evening, so be ready to party.

Thursday will feature programs, silent auctions, and our much anticipated oral auction. Our auctioneers are two of the best, Paul Callomon and Henry Chaney – always crowd pleasers. No one knows what special birthday outfit Paul will choose for this special evening. No gifts, just bring money. Another highlight on Thursday will be the famous Snail Parade. Be sure to enter for a chance to win and claim the title of Best Snail.

Friday will have more silent auctions and our annual business meeting, with a preview of the 2020 COA convention in Melbourne, Florida, 15-21 June 2020. That same evening will be our banquet, including some nice birthday gifts for all. The planned program will highlight the life and times of R. Tucker Abbott. We will award the raffle prizes and announce the winner(s) of the COA *Neptunea* Award. We will, of course, have birthday cake.

Saturday and Sunday are scheduled for the internationally famous bourse. On Saturday morning we will have the club reps breakfast, limited programs, workshops, and classes. The bourse will open at 1:00 p.m. and close at 8:00

p.m. Sunday the bourse opens at 9:00 a.m. and close at 2:00 p.m. As always, the bourse is open to the public.

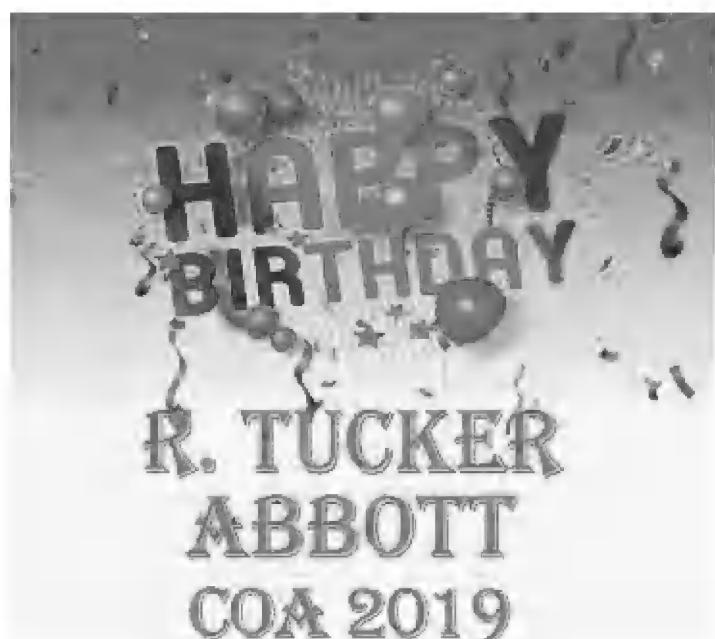
Rooms are condos, one bedroom and one bath includes resort fee for \$179 a night plus tax. There are a few two bedroom two bath units at \$259 a night, in the tennis villas. Reservations are still available. The deadline for getting the group rate is May 15th. Many rooms have already been booked, so when you read this it is possible most rooms are already gone. The resort has 6 restaurants with another 9 within walking distance. Do not delay.

<http://bookings.ihotelier.com/bookings.jsp?groupID=1719383&hotelID=13121> will take you directly to the booking page.

**The group booking code is OB4Y95 and can only be used on [www.southseas.com](http://www.southseas.com)**

**The toll free number designated for groups is: 1-800-343-3402. You must mention Conchologists of America.**

Plan to come celebrate this wonderful occasion and enjoy the wonders of Captiva Island.





South Seas Island Resort on Captiva Island – obviously a fitting place for a COA celebration of R. Tucker Abbott.



The convention area – a short walking distance from any of the condominiums.



Captain Brian provides specialized charter shelling trips.



The *Lady Chadwick* will provide special transportation.



Edison's laboratory – one of our exciting field trips. The docent led trip is fascinating, providing many insights into this imaginative and creative man.



Some Abbott books found in most every shell collector's library (although maybe only a single edition of the Abbott & Dance *Compendium* in its many printings).



Charles "Charlie" F. Sturm (1953-2018)

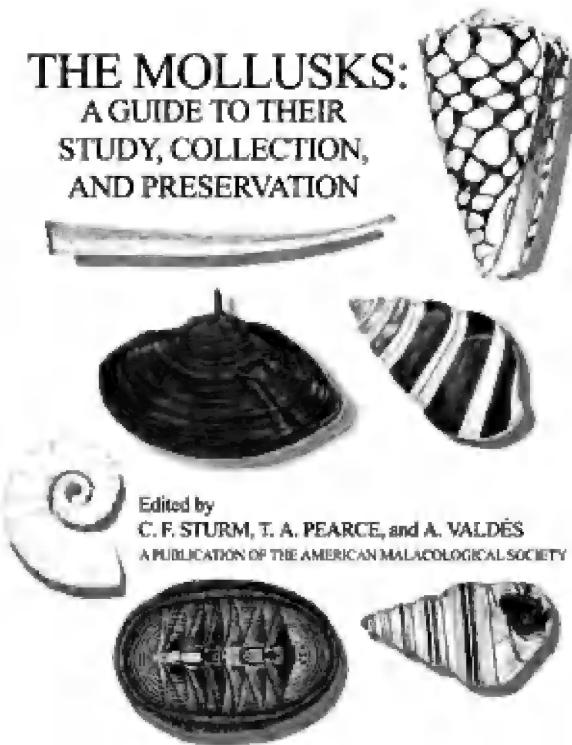
Charles "Charlie" F. Sturm passed recently. In his words, "If you are reading this, realize that while I fought the good fight, and ran the good race to the finish (2 Timothy 4:7-8), I have succumbed to my metastatic prostate cancer."

As many of us know, Charlie loved collecting fossils and seashells, especially scallops. He has been a highly valued research associate at Carnegie Museum of Natural History since 1992. In 2011, Charlie served as president of the American Malacological Society and hosted the annual meeting in Pittsburgh. As treasurer of that society for the past 5 years, he ably revived the financial records. In 2006, he published the book, *The Mollusks: A Guide to Their Study, Collection, and Preservation*. One of his proudest moments was describing a new genus and species of fossil scallop, which he named after his beloved wife: *Patriciapecten iona* (he has had a tattoo of it on his shoulder for over 15 years).

Vocationally a physician of family medicine, he practiced and taught medicine. His interest in geriatric medicine led him to serve as medical director of a rehabilitation and wellness center. His interest in wilderness medicine provided opportunities for hiking and backpacking. Charlie's other passions included his decades-long affiliation with Boy Scouts of America, which he joined as a Cub Scout, rose through the ranks to Life Scout, and served in a leadership capacity as an adult.

Timothy A. Pearce, Ph.D.  
Curator of Collections & Head, Section of Mollusks  
Carnegie Museum of Natural History  
Pittsburgh, PA

## THE MOLLUSKS: A GUIDE TO THEIR STUDY, COLLECTION, AND PRESERVATION



Edited by  
C. F. STURM, T. A. PEARCE, and A. VALDÉS  
A PUBLICATION OF THE AMERICAN MALACOLOGICAL SOCIETY

Charlie embodied what, by some quirk of branding, is nowadays referred to as "citizen science". Many young folks think this is an exciting new concept, but conchologists, entomologists, botanists, and any number of other -ists have been "citizen scientists" since the Renaissance. Charlie learned medicine well and then learned another thing equally well. The first made him a living, the second made him a new family of friends and colleagues.

Paradoxically, it's often when you're not being paid to do it that you can do our kind of work best. Long may our field continue to be graced with folks like Charlie.

Paul Callomon  
Collection Manager, Malacology and General Invertebrates  
The Academy of Natural Sciences of Drexel University  
Philadelphia, PA

**Sturm, C.F. 2011.** Description of a New Genus and Species of Scallop (Mollusca: Bivalvia: Pectinidae) from the Upper Cenozoic of North Carolina. *Annals of Carnegie Museum.* 80. 43-48. 10.2992/007.080.0105.

**Sturm, C.F., T.A. Pearce & A. Valdés. 2006.** *The Mollusks: A Guide to their Study, Collection and Preservation.* American Malacological Society, Boca Raton, FL.

# British Shell Collector's Club

## 2018 Shell Show (27 Oct)

The British Shell Collector's Club ([www.britishshellclub.org](http://www.britishshellclub.org)) was established in 1972 and held their first shell exhibition (shell show) in 1976. The event has grown and continues to be a popular show for collectors, dealers, and the general populace. This year's show had two noteworthy events. First, Simon Taylor of Essex, won the COA Award for an extensive display of bivalves. Second, Holly Hammond won the very nice John Fisher Trophy for her entry, "A start to my shell collecting." Holly's entry and interest in shells shows that shell collecting still has a few young proponents. Oh, and Brian Hammond won Best Shell of Show with a very nice *Conus textile suzanne* van Rossum, 1990. The show chairman was John Batt. Scientific judges were: Derek Howlett, Chris Vos, and Tom Walker.



Simon Taylor (left) is presented his COA Award by Tom Walker. Simon had four cases (maximum allowed) to illustrate bivalve diversity.



Simon Taylor and his (in part) bivalve display. Just over Simon's right shoulder is Simon Aiken ([www.simonsspecimen-shells.co.uk](http://www.simonsspecimen-shells.co.uk)), a frequent contributor to this journal.



Holly Hammond accepts the award of the John Fisher Trophy from Tom Walker, for her display, "A start to my shell collecting."



The British Shell Collector's Club display area with dealer tables around the outer perimeter.

## 2019 Shell Shows and Related Events (January-July)

Following information is subject to change. Please verify with individual organization.

**Jan. 12-13, 2019**

**54<sup>th</sup> Annual Broward Shell Show, Pompano Beach, FL**

Emma Lou Olson Civic Center, 1801 Northeast 6<sup>th</sup> Street  
Alice Pace, 7405 SW 128 Ct., Miami, FL 33183  
E-mail: [alicepace90@att.net](mailto:alicepace90@att.net) Tel: 305-301-1296

**Jan. 19-20, 2019**

**39<sup>th</sup> Space Coast Seashell Festival, Melbourne, FL**

**(Astronaut Trail Shell Club)**

Eau Gallie Civic Center, 1515 Highland Avenue  
Alan Gettlemen, 2225 Tanglewood Lane, Merritt Island, FL 32953  
E-mail: [lychee@cfl.rr.com](mailto:lychee@cfl.rr.com) Tel: 321-536-2896

**Feb. 8-10, 2019**

**56<sup>th</sup> Annual Sarasota Shell Show, Sarasota, FL**

Potter Building at Robarts Arena, 3000 Ringling Blvd.  
Nancy Miriani, 5003 28<sup>th</sup> Court East, Bradenton, FL 34203  
E-mail: [sarasotashellclub@gmail.com](mailto:sarasotashellclub@gmail.com) Tel: 941-758-9790

**Feb. 22-23, 2019**

**72<sup>nd</sup> St. Petersburg Shell Show, Seminole, FL**

Seminole Recreation Center, 9100 113<sup>th</sup> St. N.  
John Jacobs, 202 Soldier Court, Seffner, FL 33584  
E-mail: [johncheryl@earthlink.net](mailto:johncheryl@earthlink.net) Tel: 813-309-2608

**March 7-9, 2019**

**82<sup>nd</sup> Sanibel Shell Show, Sanibel, FL**

Sanibel Community Center, 2173 Periwinkle Way  
Mary Burton, 558 Foxcreek Drive, Lehigh Acres, FL 33974  
E-mail: [marybsanibel@hotmail.com](mailto:marybsanibel@hotmail.com) Tel: 239-395-3626

**March 14-16, 2019**

**39<sup>th</sup> Marco Island Shell Show, Marco Island, FL**

United Church of Marco Island, 320 North Barfield  
Karen Caster, 530 Peacock Terrace, Marco Island, FL 34145  
E-mail: [pjsailkw@gmail.com](mailto:pjsailkw@gmail.com) Tel: 239-253-8483

**May 18-19, 2019**

**29<sup>th</sup> Belgium International Shell Show, Belgium**

Sporthal Kattenbroek, Kattenbroek 14  
2650 Edegem, Belgium  
Charles Krijnen, Burgemeester Jansenstraat 10,  
NL-5037 NC Tilburg, Nederland  
E-mail: [bvc.shellshow@planet.nl](mailto:bvc.shellshow@planet.nl) Tel: 31(13) 463-0607  
Website: [www.konbvc.be/shellshow.php](http://www.konbvc.be/shellshow.php)

**May 31-June 2, 2019**

**Gulf Coast Shell Show, Panama City, FL**

Panama City Beach Senior Center, 423 Lyndell Lane  
Jim Brunner, 2511 Parkwood Drive, Panama City, FL 32405  
E-mail: [jili1043@comcast.net](mailto:jili1043@comcast.net) Tel: 805-215-2086

**June 17-23, 2019**

**Conchologists of America Annual Convention, Captiva Island, FL**

South Seas Island Resort, 5400 Plantation Road, Captiva Island, FL 33924  
Registration: Ed Shuller E-mail: [eshuller@mindspring.com](mailto:eshuller@mindspring.com)  
Website: [conchologistsofamerica.com](http://conchologistsofamerica.com)

**July 13-14, 2019**

**52<sup>nd</sup> Keppel Bay Shell Club Shell Show, Yeppoon, Queensland, Australia**

Gus Moore Pavilion at the Yeppoon Show Ground  
Jean M. Offord, 277 McDougall St., N. Rockhampton, Qld. 4701, Australia  
Tel: 61 (74) 391-313 Website: [keppelbayshellclub@bigpond.com](mailto:keppelbayshellclub@bigpond.com)

Vicky Wall

COA Awards Director

303 Wall Road, Mayodan, NC 27027 USA

email: [vwallshell@gmail.com](mailto:vwallshell@gmail.com)

Tel: 336-348-3260



**Conchologists of America annual convention, South Seas Island Resort, Captiva Island, FL, 17-23 June.**

José and Marcus Coltro



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